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The laying of the cable, or the ocean telegraph

John Mullaly

THE

LAYING OF THE CABLE,

OR

THE OCEAN TELEGRAPH;

BEING

A COMPLETE AND AUTHENTIC NARRATIVE

OF THE

ATTEMPT TO LAY THE CABLE ACROSS THE ENTRANCE TO THE GULF
OF ST. LAWRENCE IN 1855,

AND OF THE

THREE ATLANTIC TELEGRAPH EXPEDITIONS

OF 1857 AND 1858:

WITH A DETAILED ACCOUNT OF

THE MECHANICAL AND SCIENTIFIC PART OF THE WORK, AS WELL AS
BIOGRAPHICAL SKETCHES OF MESSRS. CYRUS W. FIELD,
WILLIAM E. EVERETT, AND OTHER PROMINENT
PERSONS CONNECTED WITH THE
ENTERPRISE.

ILLUSTRATED WITH PORTRAITS, ENGRAVINGS OF THE MACHINERY, AND
SCENES IN THE PROGRESS OF THE GREAT WORK.

BY

JOHN MULLALY,
HISTORIAN OF THE ENTERPRISE.

NEW YORK:
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Nov. 1883
Bulletin

PREFACE.

It was the good fortune of the author to have been on board the U. S. frigate Niagara during the Atlantic Telegraph expeditions of 1857–'8, and to have been present on the occasion of the landing of the cable in Newfoundland on the memorable 5th of August. While on these expeditions he acted in the capacity of special correspondent of the New York Herald, and in that position collected a large amount of information in regard to the history, progress, and successful completion of the great enterprise. This he embodies in the following pages, and it is enough to say that he was present at every scene therein described, and was acquainted with every step in the progress of the undertaking; that he knew the men by whom it was so successfully carried on, and that he has faithfully endeavored to deserve the title which he has received of "Historian of the Enterprise."

He takes advantage of this opportunity to return his thanks to the ward-room officers of the Niagara for the many kindnesses and courtesies which he received at their hands during the eleven months he spent on board that ship as their guest, and to Captain Hudson for the privileges he was permitted to enjoy on the two cruises which he made with that gallant commander. To Mr. Cyrus W. Field, from whom he obtained much of the information herein presented, he desires also to express his sincere acknowledgments for the many acts of personal friendship for which he is indebted to that gentleman. He would likewise take this occasion to return his thanks to Messrs. Markwell and Arcedeckne of London, who were unremitting in their kind attentions during his visit to that city.

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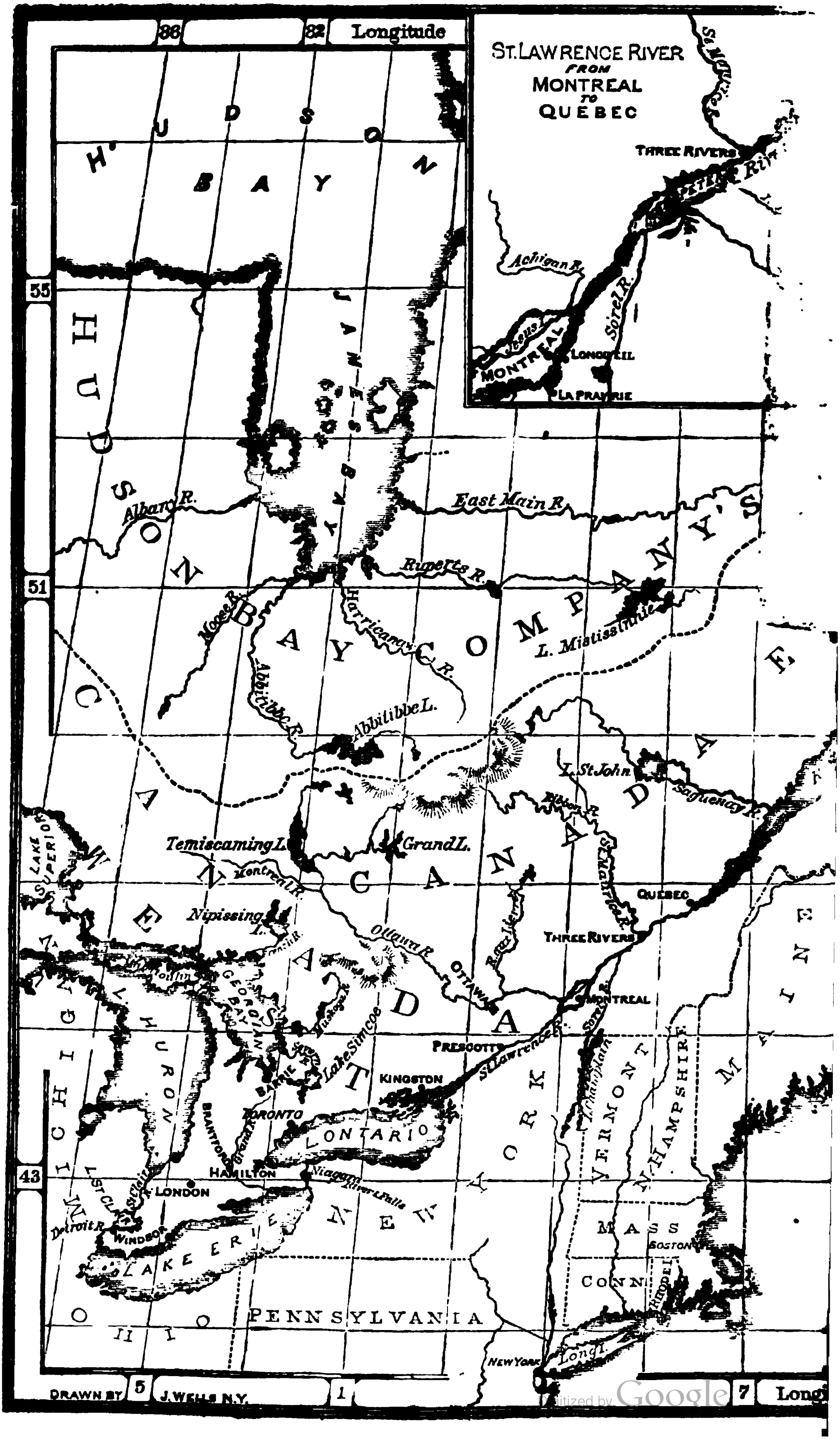

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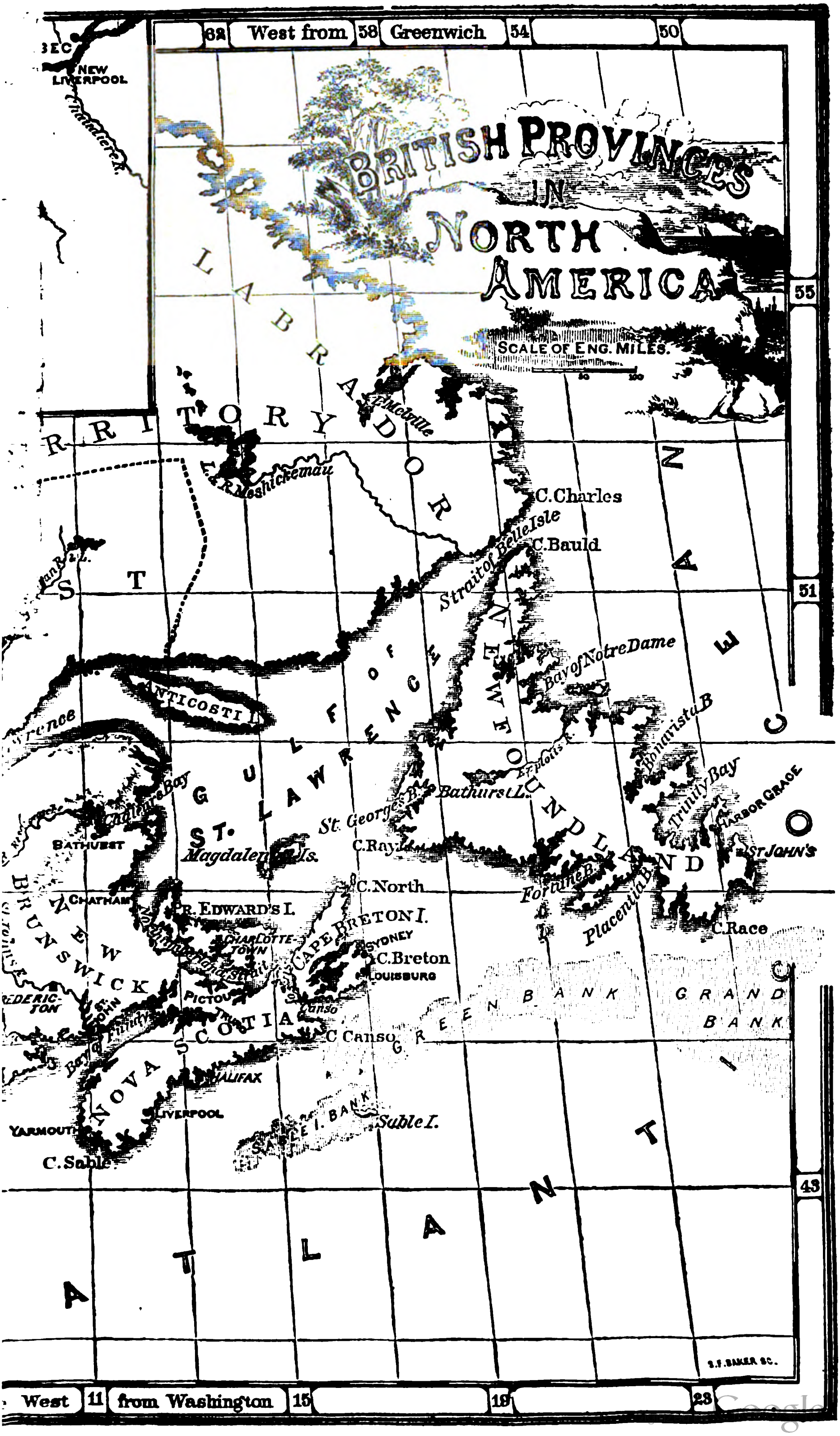
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ORIGIN AND HISTORY OF THE ATLANTIC TELEGRAPH.

In 1852 an act was passed by the Legislature of Newfoundland, incorporating certain parties for the organization of a company to construct a telegraph line across the island, extending from St. Johns on the eastern coast, to Cape Ray at its south-western extremity. Their object was to place New York and every city of the United States and British provinces within six days' communication of Europe, for the idea of a submarine telegraph had not yet taken practical form and shape. The better to carry this plan into execution, it was proposed to run a line of steamers from Galway in Ireland to St. Johns, Newfoundland, and to send the intelligence which was received on the arrival of the steamers at the latter port to Cape Ray, and thence by a small steamer connecting with the nearest available point on Cape Breton, from which it would then be transmitted by the land lines to all parts of the continent. This company failed, however, to fulfil the terms of their charter, and finally became utterly bankrupt, leaving some fifty thousand dollars unpaid, and this owing chiefly to the operatives on the line. While the company was in this insolvent condition, its engineer, Mr. Fred. N. Gisborne, applied to Mr. Matthew D. Field, who was at that time in New York, to aid them in procuring a loan for the continuance of the work. Mr. Field immediately presented the subject to his brothers Cyrus W. and David Dudley Field, and urged them to buy bonds of the company convertible into stock, or to subscribe for stock, and induce their friends to do the same. Mr. Cyrus Field took the subject into earnest consideration, and struck with the idea of establishing telegraphic communication between Europe and America by a submarine cable stretching from Newfoundland to Ireland, he wrote two letters, one to Lieut. Maury, with a view of consulting him about the practicability of submerging such a cable between the points proposed, and the other to Professor Morse, in regard to the electrical difficulties of the undertaking. In reply to these letters he received the most gratifying assurances of the practicability of the scheme from both these high scientific authorities. This correspondence took place in February of 1854, and thus satisfied of its feasibility, the two brothers resolved that an effort should be made to get up an association for the purpose of carrying it through. In reflecting upon the plan to be pursued, they came to the conclusion that it was better to confine the organization to a limited number of persons, in order to secure greater unity and decision. The following gentlemen were accordingly invited to Mr. Field's residence: Peter Cooper, Chandler White, Moses Taylor, and Marshall O. Roberts; and here we will let Mr. David Dudley Field relate this part of the history.

"They met Mr. Cyrus W. Field and myself at his house, where, around a table covered with maps, plans, and estimates, the subject was discussed for four successive evenings, the practicability of the undertaking examined, its advantages, its cost, and the means of its accomplishment. The result of the conference was the agreement of all the six gentlemen to enter upon the undertaking. Mr. Cyrus W. Field, Mr. White, and myself were to proceed to Newfoundland to procure a charter, and such aid in money and privileges as the government of that island could be induced to give. The agreement with the Electric Telegraph Company, and the formal surrender of its charter, were signed on the 10th of March, and on the 14th we left New York, accompanied by Mr. Gisborne. The next morning we took the steamer at Boston for Halifax, and thence, on the night of the 18th, departed in the little steamer Merlin for St. Johns, Newfoundland. Three more disagreeable days voyagers scarcely ever passed than we spent in that smallest of steamers. It seemed as if all the storms of winter had been reserved for the first month of spring. A frost-bound coast, an icy sea, rain, hail, snow and tempest, were the greetings of the telegraph adventurers in their first movement towards Europe. In the darkest night, through which no man could see the ship's length, with snow filling the air and flying into the eyes of the sailors, with ice in the water, and a heavy sea rolling and moaning about us, the captain felt his way around Cape Race with his lead, as the blind man feels his way with his staff, but as confidently and as safely as if the sky had been clear and the sea calm; and the light of morning dawned upon deck, and mast, and spar coated with glittering ice, but floating securely between the mountains which form the gates of the harbor of St. Johns. In that busy and hospitable town, the first person to whom we were introduced was Mr. Edward M. Archibald, then Attorney General of the colony, and now British Consul in New York. He entered warmly into our views, and from that day to this has been an efficient and consistent supporter of the undertaking. By him we were introduced to the Governor (Kerr Bailey Hamilton), whc also took an earnest interest in our plans. He convoked the Council to receive us, and hear an explanation of our views and wishes. In a few hours after the conference, the answer of the Governor and Council was received, consenting to recommend to the Assembly a guarantee of the interest of £50,000 of bonds, an immediate grant of fifty square miles of land, a further grant to the same extent on the completion of the telegraph across the ocean, and a payment of £5,000 towards the construction of a bridle path across the island, along the line of the land telegraph. Mr. Cyrus W. Field, thereupon, on the 25th of March, took the return steamer from St. Johns, on his way to New York, in order to fit out a steamer for the service of the company, while his two associates remained in Newfoundland, to obtain the charter and carry out the arrangements with the former company. They continued there nearly five weeks, during which, after many discussions and negotiations, the charter was at length obtained, and the $50,000 of debt of the old company was thereupon paid. The charter was liberal and provident. After declaring that it was 'advisable to establish a line of telegraphic communication between America and Europe, by way of Newfoundland,' it incorporated the associates for fifty years, established perfect equality in respect to corporators and officers, between citizens of the United States and British subjects, allowed the meetings of the stockholders and directors to be held in New York, or in Newfoundland, or in London, conceded the exclusive right to establish a telegraph from the continent of America to Newfoundland, across the ocean, granted fifty square miles of land; and, further, provided that 'so soon as the said company shall have actually established a communication across the Atlantic ocean, by means of a submarine cable or wire from this island, the said company shall receive from the government of this island a grant of fifty square miles of ungranted and unoccupied wilderness land, to be selected by the said company, in addition to the grants hereinbefore mentioned,' a provision subsequently extended, so as to permit the company, to establish the communication by an auxiliary or associate company. In the early part of May, the two gentlemen who had remained behind in Newfoundland rejoined their associates in New York, and there the charter was formally accepted and the company organized. As all the associates had not arrived till Saturday evening, the 6th of May, and as one of them was to leave town on the morning of Monday, it was agreed that we should meet for organization at six o'clock of that day. At that hour they came to my house, and as the first rays of the morning sun streamed into the windows, the formal organization took place. The charter was accepted, the stock subscribed, and the officers chosen. Mr. Cooper, Mr. Taylor, Mr. Field, Mr. Roberts and Mr. White were the first directors. Mr. Cooper was chosen president, Mr. White vice-president, and Mr. Taylor, treasurer. Thus was inaugurated that great enterprise whose completion we celebrate to-day. The plan was formed, the arrangements made, and the work begun. What followed was the execution of the great design. From the 8th of May, 1854, to the 5th of August, 1858, there scarcely passed four years and three months; but they were as fruitful of anxiety and toil as of successful results. The land line across the island of Newfoundland—upwards of four hundred miles—was first to be made. This was a work of incredible labor. The country was for the most part a wilderness of rock and morass, 'a good and traversable bridle road eight feet wide, with bridges of the same width,' had to be made the whole distance; men, materials, and provisions had to be transported first from St. Johns to the heads of the different bays on the southern coast, and afterwards chiefly on men's backs to the line of road. The first year Mr. White, as vice president, directed in person the operations; the second and third years superintendents were sent down. In addition to the land line in Newfoundland, another of one hundred and forty miles in Cape Breton was constructed, and contracts made with companies in Nova Scotia, New Brunswick, Maine, New Hampshire, Massachusetts, Connecticut and New York, to connect their lines with the Newfoundland line. Then there was the submarine line between Newfoundland and Cape Breton, eighty-five miles in length, and another thirteen miles long across Northumberland Straits to Prince Edward Island. To procure these Mr. Cyrus W. Field visited England twice—once in December 1854, and again in January 1856. The first attempt to lay the submarine line across the Gulf of St. Lawrence was made in 1855, and was unsuccessful. A second attempt made the next year succeeded. Thus was completed the chain of Telegraph from New York to the eastern coast of Newfoundland, and the projectors now stood upon the shore of the Atlantic in their progress eastward.

" The whole expense thus far with very trifling exceptions, had fallen upon them—Mr. Cyrus W. Field having made the largest contributions—amounting to more than two hundred thousand dollars in money—and Mr. Cooper, Mr. Taylor and Mr. Roberts each a little less. No other contributors beyond the six original subscribers had come, except Professor Morse, Mr. Robert W. Lowber, Mr. Wilson G. Hunt, and Mr. John W. Brett. The list of directors and officers remains to this day as it was at first, except that Mr. Hunt, as director, has taken the place of Mr. White, who died in 1856, and that Mr. Field is vice president and Mr. Lowber secretary. In all the operations of the company thus far, the various negotiations, the plan of the work, the oversight of its execution, and the correspondence with the officers and others, mainly devolved upon Mr. Cyrus W. Field.

"The greatest and most difficult part of the original design still remained to be executed, and that was the submarine cable from Newfoundland to Ireland. The distance was 1,950 statute miles; the sea was stormy and uncertain; no submarine line of more than three hundred miles had then been attempted. In anticipation of the task now to be undertaken, Mr. Field, on his first visit to England in 1854, had invited manufacturers to furnish him with specimens of cable which they would recommend, and estimates of its cost, and he had entered into correspondence with various persons on the subject. In 1856, he procured an order from our government under which Lieutenant Berryman made soundings of the Atlantic between Newfoundland and Ireland. Lieutenant Berryman sailed on that service on the 18th of July, and the next day Mr. Field sailed for England, having received the formal consent of the company to make arrangements in England for the submarine line, either by a subscription to this company, or by organizing a new company as auxiliary or associated with this. In England he had invited the co-operation of Mr. Brett, a gentleman of great experience, who in 1851 formed a company which had laid the first submarine cable from England to France. He afterwards brought in Mr. Edward O. W. Whitehouse, electrician, and Mr. Charles T. Bright, engineer—both gentlemen of high scientific attainments. These four gentlemen on the 29th of September, 1856, entered into a formal agreement to use their exertions for the formation of a new company, to be called the Atlantic Telegraph Company; the object of which should be 'to continue the existing line of the New York, Newfoundland and London Telegraph Company to Ireland, by making or causing to be made, a submarine telegraph cable for the Atlantic.' This done, Mr. Field issued on the 1st of November, 1856, a circular signed by him, as Vice President of the New York, Newfoundland and London Telegraph Company."

The following is the circular referred to by Mr. Field:

THE ATLANTIC TELEGRAPH.

'Fifteen years have barely elapsed since the success of the first line of electric telegraph demonstrated the immense practical importance of that invention.

'Its rapid adoption by almost every civilised nation, already gives promise of even greater things than it has yet accomplished in the furtherance of social and commercial intercourse.

'It is, however, only within the last five years that practical men have wrought out successfully the application of the same principles to the still later problem of the submarine telegraph.

'Surrounded by every species of difficulty which besets a new and untried path, Mr. Brett, with the aid of a few associates, achieved in 1851 his first success in the electric union of France and England.

'The result of this decisive experiment, favorable alike in its national, commercial, social, and, though last not least, in its remunerative aspects, has been such as to disarm all prejudice, and to encourage a desire for the utmost possible extension of similar undertakings.

'England is now united by six distinct submarine cables to adjacent coasts, and other countries have not been slow to catch her spirit of enterprise in this important application of science to the wants of man.

'America alone, the greatest and most progressive of all the nations with whom we have intercourse, has hitherto been debarred from participating with us in the advantages of electric intercommunication, while the daily increasing requirements of the two nations render such an institution more than ever necessary to the well-being of both.

'The genius of science and the spirit of commerce alike demand, that the obstacles of geographical position and distance alone shall no longer prevent the accomplishment of such a union.

'Under the influence of these considerations, the subject of establishing a telegraph to America has been largely and anxiously studied on both sides of the Atlantic.

'The careful and elaborate investigations of Lieutenant Maury, of the U. S. Navy, into the physical geography of the sea, threw a new light upon what had been supposed to constitute the chief engineering difficulties of such an enterprise. His clear and accurate definition of the currents of the ocean, and the soundings of the Atlantic deeps—imperfectly known previous to his researches—have developed an extraordinary, and, to speak with reverence, a providential fact. The two conditions to be chiefly desired for the successful submersion of a telegraphic cable are, the absence of currents interfering with the steady descent of the line; and a level bottom with a stratum likely to remain undisturbed, and adapted for its subsequent security and preservation. These conditions, though first elucidated for philosophic objects other than those of telegraphic science, have been shown to exist in a remarkable degree throughout a plain extending between the coasts of Ireland and Newfoundland; which possesses the additional advantage of being the shortest possible route between the shores of the Old and New Worlds. So marked, indeed, are those features, and so favorable is their bearing on the great project, that they seemed to the discoverer at the time so providential, as to justify his designation of it as the Telegraph Plateau.

'The mighty current which takes its rise in the Gulf of Mexico, and flows northward as far as the banks of Newfoundland, washes the eastern shores of the United States with great force; and the precipitous hollows existing in its course would render a route to the south of the banks impracticable for telegraphic purposes. Immediately to the north of the great banks these abysses cease to exist. Stretching away in a direct line from St. Johns, Newfoundland, to the bay of Valentia, on the Irish coast, lies the vast sub-oceanic plain already referred to, which is situated in the line of nearly absolute rest of the waters of the Atlantic, the bed of which has been shown, by the specimens obtained on sounding, to consist throughout of the most minute microscopic shells, which, from their delicate organism and the perfect state in which they are found, prove the utter absence of all motion in the water surrounding them. To use the words of the highest authority on the subject,*— " this plateau is not too deep for the cable to sink down and rest upon, and yet not so shallow that currents or icebergs or any abrading force can derange the wire after it is once lodged upon it."

'In April, 1854, a company was incorporated by act of the Colonial Legislature of Newfoundland for the purpose of establishing a line of telegraphic communication between America and Europe. That government evinced the warmest interest in the undertaking, and in order to mark substantially their sense of its importance, and their desire to give to it all the aid and encouragement in their power, they conferred upon it, in addition to important privileges of grants of land and subsidy, the sole and exclusive right of landing telegraphic lines on the shores within their jurisdiction, comprising, in addition to those of Newfoundland, the whole Atlantic coast of Labrador from the entrance of Hudson's Straits to the Straits of Belle Isle. This act of the Colonial Legislature was subsequently ratified and confirmed by Her Majesty's Government at home. The company also obtained in May, 1854, an exclusive charter from the government of Prince Edward's Island, and afterwards from the State of Maine, and a charter for telegraphic operations in Canada.

'The exclusive rights absolutely necessary for the encouragement of an undertaking of this nature, having thus been secured along the only seaboard eligible for the western terminus of a European and American cable, the company in the first instance commenced operations by proceeding to connect St. Johns, Newfoundland, with the widely ramified telegraph system of the British North American provinces and the United States. This has been recently completed by the submersion of two cables in connection with their land lines: one, eighty-five miles in length, under the waters of the Gulf of St. Lawrence, from Cape Ray Cove, Newfoundland, to Ashpee Bay, Cape Breton; the other, of thirteen miles, across the Straits of Northumberland, connecting Prince Edward's Island with New Brunswick. Electric communication is thus established direct from Newfoundland to all the British American Colonies and the United States.

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* Maury's Physical Geography of the Sea, p. 256.

'On the Irish side, lines of telegraph have been for some time in operation throughout the country, and are connected with England and the Continent by submarine cables. The only remaining link in this electric chain, required to connect the two hemispheres by telegraph, is the Atlantic cable.

'The New York, Newfoundland, and London Telegraph Company being desirous that this great undertaking should be established on a broad and national basis, uniting the interests of the telegraph world on both sides of the Atlantic, have entered into alliance with persons of importance and influence in the telegraphic affairs of Great Britain: and in order, at the same time, to obtain the fullest possible information before entering upon the crowning effort of their labors, they have endeavored to concentrate upon the various departments of the undertaking the energies of men of the highest acknowledged standing in their profession, and of others eminently fitted for the work, who were known to have devoted much time and attention to the subject.

'The route between the two shores had already been minutely surveyed by Lieutenant Maury, whose name alone amongst nautical men is a sufficient guarantee for the accuracy of the results obtained, and whose personal counsel and co-operation the promoters are authorized to say will be given to the undertaking in bringing it to completion. The data obtained by him have received the most ample corroboration in the recent special soundings taken by order of the United States Government, at the instance of the New York, Newfoundland, and London Telegraph Company, by Lieutenant Berryman, U. S. steamer "Arctic," whose valuable and able assistance the company wish to acknowledge.

'It is with the highest satisfaction that the company are able to refer to the aid which Her Majesty's Government are inclined to give to their labors. A line of soundings taken at spots intermediate between those effected by Lieutenant Berryman, has been ordered by the Lords of the Admiralty to be made forthwith; and the readiness and cordiality with which every suggestion on the part of the promoters has been met by their Lordships, and by those at the head of the several departments, call for the warmest thanks of all concerned in the undertaking.

'In the engineering department, advantage will again be taken of Lieutenant Maury's invaluable advice in connection with the machinery employed in paying out the cable, and of the co-operation of others who have carried out the submersion of the submarine lines already laid. The soundings of the ocean along the plateau, which gradually increase from 1,000 fathoms to 2,070 fathoms at the middle and deepest part, present no obstacle in depositing a cable with regularity along a soft and almost level plain of such a nature—and the question of submerging a cable in depths almost equal, and under less favorable conditions, has been already surmounted without difficulty.

'In order to determine various points connected with the electrical department of the undertaking, a continued investigation of all the phenomena connected with the use of long submarine circuits has been carried on during the last two years; and Professor Morse, who has recently visited England, has, for many days consecutively, gone into a rigid series of demonstrations on this subject in connection with those gentlemen who have devoted so much energy and patience to this department of the work. He declares his conviction that the problem is conclusively solved, and that the attainment of full commercial success is no longer doubtful.

'It may be mentioned here, that the possibility of readily and rapidly transmitting telegraphic signals beyond a certain distance by submarine wires, had been thrown into some doubt by the discovery of certain phenomena of induction and retardation, described by Professor Faraday.

'In the year 1854, at the instance of Mr. Brett, Mr. Wildman Whitehouse first took up the subject of the effects of induction in long submarine conductors, in its relation to practical telegraphy, by commencing a series of preliminary experiments upon a cable containing 660 miles of submarine wire. In the following year, when the great project of Transatlantic communication came more prominently into view, these experiments were continued more fully on 1,125 miles of similar wire, the results being obtained and recorded with the utmost care and accuracy, by means of apparatus contrived for the purpose, and new both in character and principle. Several facts of the highest importance to electrical science, and of the most encouraging nature as regards the undertaking, were thus determined; and in a still more extended series of experiments this year on 1,020 miles, conducted conjointly by Mr. Whitehouse and Mr. Bright, Engineer to the Magnetic Telegraph Company, these two gentlemen have been enabled to realise and amplify every previous encouraging result, and at the same time to perfect instruments suitable for practical telegraphic use, and capable of working through almost unlimited lengths of submarine wire. The size of the conducting wire required for such distant operations has formed the subject of special inquiry with these gentlemen. They have finally established a claim to the foremost position in the scientific department of the undertaking, by practically demonstrating to Professor Morse and others, on an unbroken length of over 2,000 miles of subterranean wire, the fact of telegraphic operations carried on with an amount of accuracy and at a speed which determines at once the certainty of full commercial success.

'Nothing can be more satisfactory than the result of these experimental demonstrations, which have been verified by Professor Morse,—proving, as they do—First, that telegraphic signals can be transmitted without difficulty through the required distance; Secondly, that a large conducting wire is not required for the purpose; and Thirdly, that the communication can be effected at a thoroughly satisfactory speed.

'All the points having a direct practical bearing on any part of the undertaking have thus been subjected to a close and rigid scrutiny; and the result of this examination proving to be in every respect of the most favorable character, it remained only that those possessing the required power should take the initiative.

'The New York, Newfoundland, and London Telegraph Company, possessing, in virtue of their charter, all the necessary powers, deputed their vice president to visit England in the summer of the present year; and they gave him full authority to make on their behalf such arrangements as should seem to him best fitted to carry forward the great work.

'The outline of the formation of the "Atlantic Telegraph Company" sufficiently explains the nature of these arrangements.

'The expenditure to be incurred in carrying out the undertaking is small, compared with the magnitude and the national importance of the work.

'The Projectors confidently anticipate having the cable completed in time to lay it in the summer of 1857, and under any circumstances, not later than the spring of 1858. It is proposed to employ two steamships in the submersion, each laden with half the cable, and that they shall proceed together to a point half way between the two coasts. The two ends of the cable having been carefully joined together, the vessels will start in opposite directions, one towards Ireland and the other towards Newfoundland, uncoiling the cable and exchanging signals through it from ship to ship as they proceed. By this means, the period ordinarily required for traversing the distance between the two coasts will be lessened by one-half, each vessel having only to cover 820 nautical miles in order to finish the task assigned to it. It is expected that the operation of laying the cable will be completed in about eight days from the time of its commencement.

It is no less fortunate than remarkable that the greatest depth and difficulty will thus be encountered *first;* hence, should any accident occur, it can only involve the loss of a very few miles of cable; this part safely accomplished, the progress of the vessels in the process of submersion will be hourly attended with less and less difficulty and risk.

The grandeur of the undertaking constitutes a sufficient guarantee for its commercial success when carried out; as, in addition to the great use of the cable by the governments on each side of the Atlantic, and in ordinary social intercourse, it will constitute the chief medium through which all the important business transactions between the Old and New World will be effected. The transmission of intelligence for the press in both Continents will also form a most important feature of its usefulness.

It will readily be admitted that the number of messages at present passed along the wires to or from a single capital like London,* where the rapidity of railway transit renders the Post Office a powerful competitor, will scarcely constitute any criterion of the probable amount of traffic through a cable affording the only rapid means of communication between two vast and civilized Continents, and which in its operation will shorten the period of an interchange of correspondence almost from a *month* to an hour, and to which the whole of both networks of telegraph lines, already established throughout Europe and America, amounting to not less than 100,000 miles, will act as feeders. A very limited number of commercial messages forwarded from each side daily, occupying the cable but a few hours, will, without any other sources of revenue, produce a large return on the entire capital.

The difference of longitude between the two Continents presents another important consideration connected with the advantageous working of the line; for, owing to the time in America being nearly five hours later than in Europe, the whole of the business messages of the day transmitted from this side between 10 A.M. and 3 P.M. will have arrived in America by the time the mercantile community in the various cities and towns throughout the New World have commenced business, and the cable be thus perfectly clear for the return flow of messages to Europe.

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* Not less than 3,000 messages are transmitted in and out of London, and a larger number in and out of New York, daily.

Whilst, however, the revenue of such a line must, on the lowest estimate, be exceedingly remunerative, the working expenses, being limited to the two terminal stations, will necessarily be very small. Under such circumstances, it appears difficult to over-estimate the commercial returns that will accrue from this undertaking.

(Signed) CYRUS W. FIELD,
Vice-President of the New York, Newfoundland, and London Telegraph Company.

LONDON,
November 1*st*, 1856.

"Without waiting for the formation of the new company," continues Mr. Field, "my brother, on behalf of the Newfoundland Company, made application to the British government for its aid in ships and money, and received on the 20th of November a letter from the Treasury, which I am tempted to read, promising ships to assist in laying the cable, and a fixed yearly sum in payment for government messages. He also personally solicited bankers and merchants in London for subscriptions, and, with Mr. Brett, visited Liverpool and Manchester to address public meetings. He subscribed £100,000 towards the capital of £350,000, and Mr. Brett followed with a subscription of £25,000. A day or two after the Treasury letter was received, the subscriptions were closed, when it was found that the applications for stock exceeded the capital by about £30,000, so that on the final allotment Mr. Field had eighty-eight shares and Mr. Brett twelve."

The Treasury letter referred to, reads as follows:

TREASURY CHAMBERS, *November* 20, 1856.

SIR: Having laid before the Lords Commissioners of her Majesty's Treasury your letter of the 13th ultimo, addressed to the Earl of Clarendon, requesting, on behalf of the New York, Newfoundland, and London Telegraph Company, certain privileges and protection in regard to the line of telegraph which it is proposed to establish between Newfoundland and Ireland, I am directed by their lordships to acquaint you that they are prepared to enter into a contract with the said Telegraph Company, based upon the following conditions, viz.:

1. It is understood that the capital required to lay down the line will be (£350,000) three hundred and fifty thousand pounds.

2. Her Majesty's Government engage to furnish the aid of ships to take what soundings may still be considered needful, or to verify those already taken, and favorably to consider any request that may be made to furnish aid by their vessels in laying down the cable.

3. The British Government, from the time of the completion of the line, and so long as it shall continue in working order, undertakes to pay at the rate of (£14,000) fourteen thousand pounds a year, being at the rate of four per cent. on the assumed capital, as a fixed remuneration for the work done on behalf of the Government, in the conveyance outward and homeward of their messages. This payment to continue until the net profits of the company are equal to a dividend of six pounds per cent., when the payment shall be reduced to (£10,000) ten thousand pounds a year, for a period of twenty-five years.

It is, however, understood that if the Government messages in any year shall, at the usual tariff-rate charged to the public, amount to a larger sum, such additional payment shall be made as is equivalent thereto.

4. That the British Government shall have a priority in the conveyance of their messages over all others, subject to the exception only of the Government of the United States, in the event of their entering into an arrangement with the Telegraph Company similar in principle to that of the British Government, in which case the messages of the two Governments shall have priority in the order in which they arrive at the stations.

5. That the tariff of charges shall be fixed with the consent of the Treasury, and shall not be increased, without such consent being obtained, as long as this contract lasts.

I am, sir, your obedient servant,

James Wilson.

Cyrus W. Field, Esq., 37 Jermyn street.

"Too much praise cannot be awarded," continued Mr. David Dudley Field, "to the English government and people for the zeal with which they came forward in answer to the call made upon them. Money was obtained from individuals as freely as it was wanted, and the government outran even the people. (Applause.)

"Returning then to America, Mr. Field, with his American associates, made application to the Government of the United States for aid, similar to that given by the English Government, and he applied to individuals for a participation with him in the stock he had taken. Congress voted the aid requested after a vehement opposition, against which the measure was carried in the Senate by a majority of one. Of the stock twenty-seven shares were taken in the United States."

And here closes the account of the organization of the enterprise. The biographical sketches of the men who were engaged in its successful accomplishment, and the narrative of the expeditions commencing with the first attempt to lay the Newfoundland cable, and ending with the final one on the 5th of August, will be found in the following pages.

THE MEN OF THE ENTERPRISE.

In an undertaking of such magnitude as that which forms the subject of this work, it would be unjust and invidious to give all the credit to any one man, for an enterprise of this kind requires such a combination of rare faculties and varied talents as is rarely, if ever, found in one individual. In the following necessarily brief sketches of the men who played a prominent part in the managerial, the scientific, and nautical departments of the enterprise, the author has endeavored to show their different relations with it, and to present a simple statement of the facts to the public.

CYRUS W. FIELD.

Cyrus West Field was born in Stockbridge, Massachusetts, in November, 1819. His father was the clergyman of that place, and is still living at the advanced age of seventy-eight. His mother is also alive, and although but a few years younger than her husband, is a woman of remarkable energy and vitality, both of which qualities seemed to have been inherited to the fullest extent by the subject of this sketch. In 1853 nearly all their children were assembled beneath the old homestead to celebrate their golden marriage, and among them was Mr. Cyrus W. Field, who had arrived just in time for the purpose from an extended tour in South America. We should have said that all their children, consisting of seven sons and two daughters were present, and a still larger number of grandchildren.

The eldest of the brothers, David Dudley Field, is a lawyer, and occupies a high position at the New York bar.

Matthew D. Field, who is by profession a civil engineer, was a State Senator of Massachusetts, and is now in connection with Major Ripley, late of the U. S. Army, proprietor of a valuable lead mine on the land of the New York, Newfoundland, and London Telegraph Company, within some fifteen miles of Trinity Bay.

Jonathan Edwards Field is a lawyer at Stockbridge, and stands at the head of the bar in his native county. He has also been a State

CYRUS W. FIELD.

Senator, and was at one time nominated for the office of Secretary of State of Massachusetts.

Stephen Johnson Field is now Justice of the Supreme Court of California, and has lately distinguished himself by two dissenting opinions from the court—one in favor of the constitutionality of the law for the observance of the Sabbath, and the other in regard to the Frémont claim.

Another brother, Timothy Field, entered the U. S. navy as a midshipman, and was lost at sea.

Henry Field is a clergyman, and was pastor of a church in St. Louis, and of another in West Springfield, Massachusetts. He is now one of the editors of the New York Evangelist, and a literary man of much ability. A book which he wrote some years ago, entitled, "The Irish Confederates of 1798," is one of his best efforts.

Cyrus W. Field, the subject of this sketch, resolved, when quite a boy, to become a merchant, and with this determination came to New York in 1835, being about sixteen years of age. His brother David Dudley procured him a situation in the store of Mr. A. T. Stewart, with whom he served his apprenticeship. He remained with Mr. Stewart about four years, and when he left the establishment his fellow clerks testified their appreciation of his many good qualities by giving him a dinner, at which were a large number of his friends. Soon after leaving Mr. Stewart he engaged in the manufacture of paper in Westfield, Massachusetts. In 1840, three months before he reached his majority, he married Miss Mary Bryant Stone, of Milford, Connecticut. He remained at Westfield about two years, at the end of which time he returned to New York, and established a paper warehouse, but failed when he had been a comparatively short time in the business. A compromise, however, was obtained with his creditors, and having succeeded in procuring a release from his obligations, he again started in business. This time he was successful, and in 1852 had realised a large fortune. But his creditors were not forgotten, for, having kept a strict account of the balance which he believed was still due, notwithstanding the fact that they had released him from the obligation, he sent each of them a check for the amount. Having amassed a competency for life, he gave up the business to Mr. Stone, his brother-in-law, and started on a tour to South America with Mr. Church, the well-known artist. The first place at which they arrived was Carthagena, at the mouth of the Magdalena River, from which they went to Honda, and thence to Bogota. From Bogota the travellers proceeded across the Andes to Quito on the backs of mules, and from Quito to Guayaquil. At Guayaquil they took the steamer to Panama, and reaching Aspinwall by the shortest route, took passage at once for New York—Mr. Field arriving at home in time for his father's golden wedding.

During the summer of 1854, the death of his brother-in-law, Mr. Stone, rendered it necessary for him to resume his business relations with his former partners, and he once more entered upon the active duties of the establishment which he had left but a comparatively short time before.

Mr. Field's connection with the great work, the successful termination of which has brought him so prominently before the public, commenced in the year 1854, from which time up to the present he has been the very life and soul of the enterprise. As all the facts and details or his connection with both the Newfoundland and Atlantic telegraphs are given in the history of the two companies, it is needless to repeat them here. There are some facts, however, which we cannot avoid giving in detail. In the summer of 1856 Mr. Field arrived at Liveopool en route for London, in order to procure specimens and samples of cable from which to select one for the Atlantic Telegraph Company. In August of the same year, Lieut. Berryman, commanding the Arctic, entered Queenstown, having surveyed and sounded the plateau between Ireland and Newfoundland. As soon as Mr. Field was apprised of it he set out for Cork, and having consulted with Lieut. Berryman, returned to London by way of Milford Haven, Wales. In the cars that started from Milford Haven was Mr. Brunel, the celebrated engineer, whom Mr. Field recognized, and to whom he introduced himself. The subject of conversation was the cable, and in course of it Mr. Field brought forward a portion of the cable submerged in the Gulf of St. Lawrence, the core of which is composed of seven twisted strands, which form the conductor. "Why not have the outer covering of the Atlantic cable formed of twisted strands as well as the conductor," said Mr. Brunel. "By that means you will have a stronger, lighter, and more flexible cable than if you retain the outer covering or armor of solid wire." By one of those strange coincidences that often happen in every-day life, Messrs Glass and Elliott, the well-known gutta percha manufacturers, were also in the cars, and overhearing the conversation, joined in. During a ride of three hundred miles, the party so opportunely thrown together discussed this subject, and the result was an order to Glass and Elliott to manufacture a specimen cable after the plan suggested by Mr. Brunel.

Mr. Field is, as the public are already aware, a man of the most indomitable energy and success; a man who seems to delight in meeting obstacles, that he may have the pleasure of overcoming them. No defeat, no matter how discouraging, disheartens or sways him from his purpose, to which he holds with remarkable tenacity. An illustration of this was presented on the 11th of August, 1857, when the cable parted. The disaster had just occurred when the news spread over the whole ship, creating a most painful excitement. Mr. Field, who had more at stake in the enterprise than any member of the whole company, and who might be supposed to feel the effects of the failure more than any one aboard, proved himself equal to the emergency. Losing no time in vain regrets, he called a meeting at once on board the Niagara, at which Captain Hudson and the commanders of the other ships were present, and it which it was resolved to make a series of experiments in view of the resumption of the undertaking the following October, or in the summer of 1858. These experiments were intended to test the practicability of splicing and laying the cable from mid-ocean, and it is enough to say that they were successful. Having made the arrangements for these experiments and ascertained the amount of cable paid out, Mr. Field started for England on board the Cyclops, one of the British ships of the squadron, and on landing proceeded at once to London. When Mr. Field reached London he found that the news of the failure had got there before him, and the directors and shareholders met him with what it would require a terrible latitude of expression to call encouraging looks. A meeting of the Board was immediately called, at which Mr. Field set forth the prospects and condition of the enterprise, and showed, whatever doubts there might have been, there could be none now regarding its practicability. He infused new hope into the company, and arrangements were immediately entered into to renew the attempt during the present summer. We should state that at this time Mr. Field was simply a director, but at the particular and special request of the company he subsequently accepted the position of general manager. His appointment to this office was made when he was in the United States, and as soon as he secured the consent of the Government giving Mr. Everett, the Chief Engineer of the Niagara, leave of absence, for the purpose of designing and superintending the construction of the paying-out machinery, he returned to England, where he arrived on the 16th of January. But there are some other points which should be mentioned here, showing the nature of Mr. Field's connection with the undertaking. About four years ago, as we have said, he interested himself for the first time in telegraphic enterprises, and with an energy that appears to characterize every thing he undertakes, entered upon this new field. It was through his efforts and the efforts of Mr. David Dudley Field, Mr. Chandler White, Mr. Moses Taylor, Mr. Marshall O. Roberts, and Mr. Peter Cooper, that an association, called the "New York, Newfoundland, and London Telegraph Company," was organized, for the purpose of laying a cable across the Gulf of St. Lawrence, and of connecting with the line which the Atlantic Telegraph Company intended to lay between Europe and America. Mr. Chandler, who was one of the most active and energetic of the early members, has since died, and his place is now occupied by Mr. Wilson G. Hunt, a merchant of high reputation and standing in New York. This latter company had been organized, but the capital was not subscribed. Mr. Field determined, however, that the enterprise should not be delayed on this account, went to England and held meetings in London, Liverpool, Manchester, and other places, where, by his speeches, he created such an enthusiasm, that in the course of a few weeks the whole amount of the stock was taken up. He had previously, in connection with Mr. White and David Dudley Field, as we have stated, obtained a charter from the Colonial Government of Newfoundland, granting the

American Company the exclusive privilege for fifty years of running a telegraph across that island and through any of the adjacent waters In addition to this the company were secured the interest on two hundred and fifty thousand dollars for fifty years, and a present of fifty square miles of land, which they were at liberty to select in any part of the island. Through the efforts of Mr. Field, there were other minor and less substantial marks of favor bestowed upon the company by the Newfoundland government. Charters had been previously granted by the governments of Prince Edward Island and New Brunswick, also giving the company exclusive privileges and benefits. Every thing had been thus favorably settled to prepare the way for the great work of the age. Through the same manager, the governments of the United States and Great Britain were induced to grant the use of six national ships with which to perform the task of submerging the cable. As a proof of the services which were rendered by Mr. Field, from his connection with the great undertaking, it is only necessary to quote the following incontrovertible testimony.

Mr. P. Christopher Bushell, President of the Liverpool Chamber of Commerce, addressing a meeting of the Atlantic Telegraph Company on the 18th of February, 1858, made use of the following language:

"We know that the greatest sacrifices have been made—I think I may say by all the gentlemen connected with this enterprise, especially by the great originator of it, Mr. Cyrus W. Field."

And at the same meeting the following resolution was unanimously adopted:

"*Resolved*, That the warm and hearty thanks of the company be tendered to Mr. Cyrus W. Field, of New York, for the great services he has rendered to the Atlantic Telegraph Company, by his untiring zeal, energy, and devotion from its first formation, and for the great personal talent which he has ever displayed and exerted to the utmost in the advancement of its interests."

In seconding the resolution, Mr. Brooking, the Vice-Chairman, said:

"It is now about a year and a half ago since I had the pleasure of making the acquaintance of my friend Mr. Field. It was he who initiated me into this company, and induced me to take an interest in it from its earliest stage. From that period to the present I have observed in Mr. Field the most determined perseverance, and the exercise of great talent, extraordinary assiduity and diligence, coupled with an amount of fortitude which has seldom been equalled. I have known him cross the Atlantic in the depth of winter, and, within twenty-four hours after his arrival in New York, having ascertained that his presence was necessary in a distant British colony, he has not hesitated at once to direct his course thitherward. That colony is one with which I am intimately acquainted, having resided in it for upwards of twenty years, and am enabled to speak to the hazards and danger which attend a voyage to it in winter. Mr. Field no sooner arrived at New York, in the latter part of December, than he got aboard a steamer for Halifax and proceeded to St. Johns, Newfoundland. In three weeks he accomplished there a very great object for this company. He procured the passing of an Act of the Legislature which has given to our company the right of establishing a footing on those shores, which ere long, I hope, will result in connecting us with Ireland. You have now the right to go on the shores of Newfoundland. Without that right conceded by the Legislature of that island you would not have been enabled to go there; and that right which we have secured is confined exclusively to our company. That is only one of the great acts which Mr. Field has performed with a desire to promote the interests of this great enterprise. (Hear, hear.) I have worked early and late with Mr. Field, and can speak to his diligence with the greatest possible satisfaction: and I feel persuaded that in selecting that gentleman to assist the Directors in the general management of the company there has been imparted into it an element of success which has given to me and to others a large increase of confidence in the result of our undertaking. I have in him and in his judgment every possible faith, and I believe that my colleagues repose equal confidence in his ability."

To this high compliment Mr. Field responded as follows:

"I feel, gentlemen, that I have scarcely time to eat, drink, or sleep, and none to make a speech; but I assure you that all the energy and little talent which God has given me shall be bestowed between now and next June in endeavoring to carry out this enterprise; and it will give me great pleasure, when I am in America, to talk through the cable with any of you upon this side of the Atlantic. (Loud cheers.) Before you separate I hope you will pass one resolution for me—it is a vote of thanks to the directors of this company. I am not a director: but I know something of companies on both sides of the Atlantic, and I may safely say that I never knew a company in which the directors worked so hard, and exhibited so little of selfish motive, as in this. Your Board comprises gentlemen in London, Manchester, Liverpool, and Glasgow, and day after day I have seen almost every member attending the meetings of the directors, not for the sake of putting a guinea a day into their pockets; for they are above that; but from higher motives and loftier considerations. (Cheers.) Your directors have never received a farthing of your money, and I hope that the meeting will unanimously pass a vote of thanks to those gentlemen." (Applause.)

Extract from the Minutes of the Board of Directors, dated January, 27, 1858.

"The Directors having for several months felt that it would greatly advance the interests of this enterprise, if Mr. Cyrus W. Field of New York, could be induced to come over to England, for the purpose of undertaking the general management and supervision of all the various arrangements that would be required to be carried out before the sailing of the next expedition; application was made to Mr. Field, with the view of securing his consent to this proposal, and he arrived in this country on the 16th instant, when it was ascertained that he would be willing if unanimously desired by the Directors, to act in behalf of the Company as proposed, and Mr. Field having retired, it was unanimously resolved to tender him in respect to such services, the sum of £1000 over and above his travelling and other expenses, as remuneration."

Mr. Field declined to accept any thing in compensation for his services, at the same time that he complied with the request of the Company. Whereupon the following resolution was passed:

"*Resolved*, That Mr. Field's kind and generous offer be accepted by this Board; that their best thanks are hereby tendered to him for his devotion to the interests of this undertaking."

Extract from the Proceedings of the Meeting of the Managing Committee, dated at London, 26th of March, 1858.

"*Resolved*, That Mr. Cyrus W. Field, General Manager of the Company, is hereby authorized and empowered to give such directions and orders to the officers composing the staff of the Company, as he may from time to time deem necessary and expedient with regard to all matters connected with the business proceedings of the Company, subject to the control of the Directors."

"*Resolved*, That the Staff of the Company be notified hereof, and required to observe and follow such directions as may be issued by the General Manager."

On the reception in London of the news of the success of the undertaking, the Secretary of the Company, Mr. George Saward, addressed a letter to Mr. Field, from which the following is an extract: "At last the great work is successful. I rejoice at it for the sake of humanity at large. I rejoice at it for the sake of our common nationalities, and last but not least, for your personal sake. I most heartily and sincerely rejoice with you, and congratulate you, upon this happy termination to the trouble and anxiety, the continuous and persevering labor, and never-ceasing and sleepless energy, which the successful accomplishment of this vast and noble enterprise have cost you. Never was man more devoted—never did man's energy better deserve success than yours has done. May you in the bosom of your family reap those rewards of repose and affection, which will be doubly sweet from the reflection, that you return to them after having been under Providence the main and leading principal in conferring a vast and enduring benefit on mankind. If the contemplation of fame has a charm for you, you may well indulge in the reflection, for the name of Cyrus W. Field will now go onward to immortality, as long as that of the Atlantic Telegraph shall be known to mankind." For some time after the return of the fleet from the second unsuccessful expedition, it was doubtful whether another attempt would be made at once or whether the enterprise would be postponed indefinitely. Many of the directors, discouraged by repeated disappointments, were in favor of selling the cable and giving up the idea altogether, rather than risk all their capital by a disastrous failure. A despatch was sent to Mr. Field, at Queenstown, informing him of the feeling prevailing among the directors, and the probability that they would abandon the enterprise. He lost not a moment in indecision, but hastening to London, called together the directors and endeavored to infuse among them his own high hopes and sanguine expectations. One director left the meeting, refusing to take any part in the proceedings; but the other members who were present at last concurred in his views, and gave their sanction to another and final attempt.

PROF. S. F. B. MORSE.

The inventor of the electro-magnetic telegraph is so well known, not only in his own country, but throughout the civilized world, that it would appear almost unnecessary to say any thing further of him than that he acted as electrician on the first Atlantic telegraph expedition. There are, however, some circumstances connected with his invention which are of such particular interest at this time as to justify a relation of them here. Before, however, entering into these, it may be well to state a few facts in connection with the earlier life of Professor Morse. It is not, perhaps, generally known that at the time he invented the magneto-electric telegraph he was engaged in the active pursuit of his profession as an artist, in which he had obtained a high reputation for some original works. He was a sculptor as well as a painter, and his model of the Dying Hercules, which was made in England in the year 1813, gained for him the highest medal of the Adelphi Society of Arts. This model was intended simply as a copy from which to paint his picture of the same subject—a work of art which received at the time the greatest praise, and which was selected from among the first for particular notice by the critics.

Professor Morse left England in the year 1815, having resided in that country about four years, and returned to his native land, where he continued the active pursuit of his profession as an artist. In 1829 he again visited England and remained till 1832, in which year he went home in the ship Sully. It was during the passage in this ship that he first conceived the idea of the electro-magnetic recording telegraph, the invention of which has given him so prominent a place among the great scientific men of the world. Among the passengers on the Sully was Hon. Wm. C. Rives, United States Minister to France, and a number of other gentlemen who have since been the most ardent friends of the Professor. In one of the many social gatherings which took place among the company, a conversation arose in regard to a subject which was at that time extensively discussed among scientific circles—the obtaining of a spark from the electro-magnet, which showed the identity of electricity and magnetism, a fact which had often been supposed to exist, but the existence of which had not been conclusively proved by actual experiments. In the course of conversation the well-known circumstance of Franklin's having caused electricity to pass through three or four miles of wire, for the purpose of measuring its velocity, was related, and it was this particular circumstance which led the Professor to an investigation of the subject, with the view of employing the subtle agent as the messenger of man. He made the observation, that "if electricity can be made visible in any desired part of the circuit, there is no reason why a system of signs could not be devised by which intelligence might be transmitted between distant points." The remark excited little or no attention at the time, but the idea took such firm possession of his mind that he devoted the greatest part of his leisure time to the invention of an instrument by which, what was before but an idea, was to be converted into a fixed fact. The result was the invention of a machine of which an illustration and description are presented on another page. In the year 1835 he exhibited this model to his class of pupils in the New York University, where he had his studio, and gave an explanation of the purpose for which it had been constructed; but it was not till the month of October, 1837, that he entered a caveat at the Patent Office in Washington. This caveat contained a detailed description of the invention. In 1838 he applied to Congress for an appropriation for the erection of a telegraph line between Washington and Baltimore, a distance of thirty miles, the sum required being thirty thousand dollars. The application was before Congress about five years before it was acted upon, and it was not till the month of May, 1844, that the line was in operation. The first message sent over the wire was by Miss Annie Ellsworth, the daughter of the Commissioner of Patents, who had taken an active interest in the passage of the bill granting the appropriation. Miss Ellsworth was the first to convey the intelligence of the fact to the Professor, who had despaired of the passage of the bill that year, as the close of the session was at hand and there was no prospect of its being taken up before the next session. At the last hour, however, it was passed, and the following morning the Professor, who was in ignorance of the circumstance, and was preparing to leave Washington, was informed by Miss Ellsworth of the final success of the application.

"Annie," said he, when she had imparted the welcome tidings—"Annie, the first message that goes over the wires shall be sent by you." And, true to his promise, the first message was sent by her. This corresponded with the high character of the event, and has connected her name with it forever. In answer to the Professor's notification, she sent the following as the message which she deemed should be transmitted from Washington to Baltimore:

"What hath God wrought!'

The establishment of this telegraph was soon followed by the construction of others, and from that time to the present they have increased with such rapidity that there are now about forty-five thousand miles in operation in the United States.

In 1838, while the application for an appropriation was pending before Congress, he went to England and applied for a patent for his invention there, but it was denied on the ground that a description of it, as it had been exhibited to his class, was copied from an American into an English publication, and it had thus become public property. It is needless to say any thing further to show the absurdity of such a reason—a mere statement of the grounds upon which the denial was based is sufficient for that. Various claimants have since risen to dispute his right to the invention; but, after a tedious litigation and a display of the most bitter hostility, the justice of his claims has not only been recognised, but his instrument is now almost universally used and acknowledged as the most perfect that has been invented.

It was a matter of regret to all connected with the undertaking, to whom Professor Morse had endeared himself by his many admirable qualities, that he was not on board the Niagara during the final expedition, but he had previously withdrawn from the enterprise. He is now in Europe receiving the well-deserved rewards of his labor from the crowned heads who have thus honored themselves by honoring genius in the person of the inventor of the Electro-Magnetic Telegraph. We cannot better close our sketch of this distinguished gentleman, than by giving descriptions of the first model of his recording machine:

THE FIRST ELECTRO-MAGNETIC RECORDING INSTRUMENT.

The Morse system is based upon the important discovery made by Professor Oersted, of Copenhagen, in the winter of 1819, which laid the foundation of the science of electro-magnetism. He ascertained that when a wire conducting electricity is placed parallel to a magnetic needle properly suspended, the needle will deviate from its natural position, and place itself at right angles with the conducting wire. Other new and important facts were soon after discovered.

The following illustration and description of the model of the first electro-magnetic recording machine, invented by Professor Morse, possesses much interest in this connection:

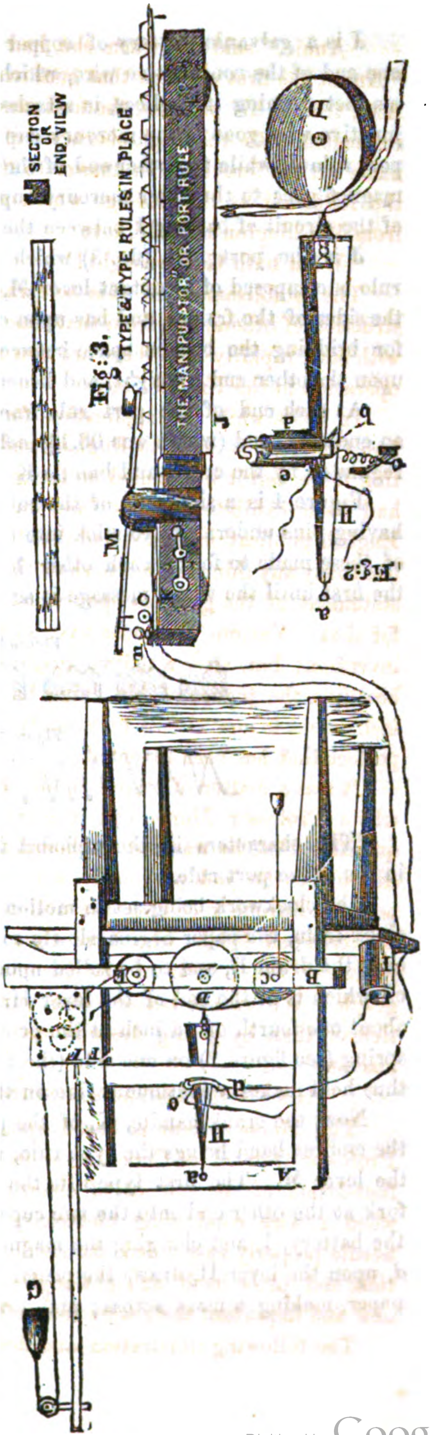
(Fig. 1.) A is a juncture frame, nailed upon a common table to serve for the building up of the machinery. B is a sort of trough simply for sustaining the three drums, C, B, and E.

C is the paper drum, on which the paper is rolled.

E is moved by a cord passing over the little pulley-wheel on the outside of the axle of the second wheel of the clock train of F, and is moved by the train when in motion. F is a clock train of wheels moved by the weight G, and regulated by a fly.

G is the weight passing over a pulley elevated for the purpose of a longer run.

H (figs 1 and 2) is a pendulum lever, having the fulcrum at A, and a limited movement of about a quarter of an inch at the other extremity, which carries a pencil made to be in constant contact with the paper strip passing over the drum D. About half way up on the lever is attached the keeper *d* of an electro-magnet *e*, fixed upon a small bracket from the cross bar of the frame, and on the other side is the fixture for a spring and regulating screw, to retain the lever or withdraw it, when the magnet is not in motion.


THE FIRST ELECTRO-MAGNETIC RECORDING INSTRUMENT.

I is a galvanic battery of copper and zinc, from one pole of which one end of the conjunctive wire, which is continuous around the electro-magnet forming its helices, is attached. From the other pole the conjunctive wire goes to the mercury cup (fig 3) *n*, at one extremity of the port rule J, while the other end of the conjunctive wire from the electro-magnet goes to the other mercury cup *o*, leaving the only broken part of the circuit of battery I between the two cups *n* and *o*.

J is the port rule (fig. 3) which carries the type rules. The port rule is composed of a contact lever M, whose fulcrum is supported from the sides of the frames, and has upon one end of the lever a forked wire for bridging the broken space between the mercury cups *n* and *o*, and upon the other end a weight, and beneath it a cog.

At each end of the port rule frame is a drum (K and L), carrying an endless band (which was 06.1½ inch carpet binding) whose motion is regulated by the crank and handle K.

Figure 4 is a side view of the rule in which the type were set up, having pins underneath to stick into the endless band; there were many of these made to follow each other by simply placing a second behind the first until the whole message is sent.

Figure 5.

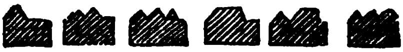
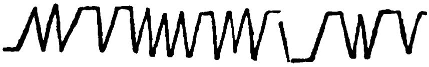


Figure 6.



[The characters in the alphabet that would be marked by the type in the above port rule.]

The clockwork being set in motion by releasing the fly wheel of the clock train, the paper begins slowly to be unrolled from the drum C, over the drum D, and to be rolled upon E, after passing under the pencil which is at the end of the lever H. The lever H has a motion of about one-fourth of an inch at the pencil end; the pencil is held by the spring (see figure 2) on one side (the left) of the paper strip, and while thus held makes a continuous line on that side.

Now, the crank handle, K, of the port rule (figure 3) is turned, and the endless band brings the type rule, with its type, under the cog upon the lever M. The first type lifts the cog and lever, and plunges the fork at the other end into the two cups, N and O, closing the circuit of the battery, I, and charging the magnet, *e*, which, attracting the keeper, *d*, upon the lever H, draws the pencil to the other (right) side of the paper, making a mark across; and now the first type having passed the cog of the lever M, the weight causes the lever to fall, and withdraws the fork from the mercury cups, breaking the circuit and discharging the magnet, leaving the spring again to act and restore the lever H, with its pencil, to its position on the left side of the paper, having in its retreat made another mark across the paper and completed the first character, which is in the form of a V. Thus, by the continuous movement of the port rule, with its type, the forms of the type, whether dots or lines, are similarly marked upon the paper. (An example of the characters thus marked is seen in figure 6.)

This plan and history of the recording telegraph of Prof. Morse is from the evidence in the courts of the United States, proved by several witnesses to have been in operation in 1835. It may well be asked, then, why in every history of the telegraph published in England or elsewhere, this date of 1835 should be ignored, and the injustice towards Prof. Morse perpetrated by constantly giving the date of his invention 1837. He planned it in 1832, and executed it in 1835. The date of the caveat or patent is not the date of the invention, for it will scarcely be maintained that the invention was not made if he had not taken his patent.

Prof. Morse, in 1835, conceived the idea of making an electro-magnet record words by having a steel point fixed to the end of a lever, upon which was attached an armature—the armature, in being attracted by the electric-magnet, to indent paper, which should be drawn forward at an uniform rate of speed. Prof. Morse found himself unable to make use of his instrument for great distances, from the resistance to and dissipation of the electrical current along the conductors. To overcome this difficulty he adopted, in the spring of 1837, a receiving magnet, and a relay or repeating circuit. Prof. Morse made application for a patent in April, 1838, and in December, 1842, Congress appropriated $30,000 for the purpose of testing its practical application. In the month of June, 1844, the instrument was working in an eminently successful manner for a distance of forty miles, between the cities of Baltimore and Washington. Prof. Morse has obtained for his instrument several patents—the first was dated June 20, 1840. This was re-issued January 15, 1846. A second patent was taken out on the 11th of April, 1846. These were both re-issued on the 13th of June, 1848; and another patent, containing improvements, was taken out on the 1st of May, 1849.

MR. WM. E. EVERETT.

The subject of this sketch is a native of Watertown, in the State of New York, and was born on the 17th of April, 1826. He obtained

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WILLIAM E. EVERETT.

his present commission as Chief Engineer in the United States Navy at the close of the Mexican war, throughout the whole of which he served both on sea and land. Although but a junior in the service, he was often intrusted in important and responsible positions.

Entering the navy in 1845 as Assistant Engineer, his promotion was very rapid, and he was intrusted with the performance of important and responsible duties by the government. While Assistant Engineer, Mr. Everett served a considerable time under Mr. Haswell, a gentlemen to whom he considers himself much indebted for his proficiency in the science in which he has obtained such an enviable reputation. Mr. Everett was one of the members of the Board of Engineers appointed to examine and report upon the construction of the engines for the six war steamers, of which the Niagara was one. In the beginning of 1857 he received his appointment as Chief Engineer of that vessel, and acted in that capacity during the first Atlantic Telegraph Expedition.

It was while holding this position that he rendered the efficient service to the undertaking that brought his mechanicals kill and ingenuity into such prominence. When it was decided by the committee appointed by Capt. Hudson last year, and consisting of Mr. James H. North, the first Lieutenant of the Niagara, Commander Pennock and Mr. Everett, that there was sufficient space in the ship for the reception of the cable, he (Mr. Everett) contributed largely towards her preparation for the coiling of the great sea line. Subsequently his suggestions, when followed out by the Chief Engineer of the company, were attended with the most satisfactory results. When the cable parted and the vessels returned to Plymouth, he was requested by the directors to make a report in regard to the machinery, and to suggest whatever alterations and improvements he considered necessary to adapt it to the work. In the performance of this task, he called in to his assistance Messrs. Penn, Lloyd and Field, three engineers of distinction in England, with whom he consulted and made a joint report. After this, the Niagara having discharged the remainder of the cable, returned to New York, arriving on the 20th of November, 1857. She was some days after put out of commission, and on the application of Mr. Field, again granted by the government for the renewal of the attempt this summer. From what they had seen and known of Mr. Everett, the company resolved on applying, through the general manager, Mr. Cyrus W. Field, to our government for "the loan" of that gentleman, as an English paper expressed it. The application was not only a high compliment to Mr. Everett personally, but a high compliment to the character of our country. Not only by the expressed desire, but at the earnest solicitation of the Board of Directors, leave of absence was asked for him, that the enterprise might have the advantage of his abilities. The engineering department was to be placed under his direction; he was to draw up the plan of the machinery, and the whole was to be constructed under his supervision. The application being a somewhat unusual one, our government hesitated for some time before granting it, but on due consideration acceded to the request. Mr. Everett obtained the required permission and started for England with Mr. Field, the 6th day of January last, in the Persia, arriving in Liverpool on the 16th of the same month. No time was to be lost. The two proceeded at once to London, where they found that nothing had yet been done towards making the experiments preliminary to the adoption of the required form of machines for paying-out the cable, although it had been explicitly understood before Mr. Everett's departure from England, that the experiments would be announced to him on his arrival. Nothing, however, as we have said, had been done, and he was obliged himself to enter upon the experiments, the results of which were of such consequence. Night and day he worked in the dirty, miserable-looking, out of the way factory, in a dirty, miserable-looking, out of the way place, called Gravel lane, and in some four or five weeks had developed the plan of the admirable machine, copies of which are now on board the Agamemnon and Niagara, and a detailed and illustrated description of which is placed before our readers. The machinery was tested for several days, and at an appointed time a number of the most distinguished engineers of England were invited to its inspection. It is almost needless to state what is already known, that it met with general approval, and that it was decided to be the best adapted to the purpose for which it was designed. About three weeks before the departure of the expedition, it was sent down to Plymouth and put on board both ships, Mr. Everett attending more especially to that which had been designed for the Niagara. The same expedition which had marked the whole work attended its fitting up at Plymouth, where it was also tried with equal success. Mr. Everett having thus far performed the work, was further requested by the company to take charge of the paying-out on the Niagara, as it was impossible for him to superintend it on board of both ships. In the labors incident to this position, he was assisted by Mr. Henry Woodhouse, a gentleman who occupies a distinguished position among the scientific men of England, of which country he is a native.

Before taking charge of the paying-out machinery on the Niagara, Mr. Everett received the following official letter:

Atlantic Telegraph Company,
22 Old Broad street, London, April 24, 1858.

Dear Sir:—As you have now reported to the managing committee that the paying-out machinery for H. M. ship Agamemnon is completed, and that it has been working satisfactorily during the last three days, and that you do not consider any alteration necessary to increase its efficiency; and as another set is required for the United States frigate Niagara, the managing committee have authorized and instructed me to request that you will immediately give directions to Messrs. Easton & Amor to put another set in hand for that ship; and I am further to request that you will continue your supervision over the construction of the machinery, and also undertake to superintend and direct its being properly fixed and fitted on board the Niagara.

I am further instructed to request, that you will take charge of the operation of experimenting upon, and subsequetly of paying out the cable from that ship; in doing which you will have the cooperation of Messrs. Woodhouse, Follansbee, and of such assistant engineers as you may consider it requisite to appropriate to such service. You are also authorized to make such preparations and arrangements as are necessary to enable you to carry out the foregoing instructions.

I remain, yours truly,

Geo. Saward, Secretary.

To W. E. Everett.

MR. WOODHOUSE.

Mr. Woodhouse is Assistant Engineer of the Telegraph Company, and was appointed to aid Mr. Everett in the laying of the cable. He was on the first expedition, and has been ever since retained in the service of the company. The work which came under his charge has always been thoroughly performed, and his efficiency and practical talent have rendered him an invaluable *attaché* to the undertaking. Mr. Woodhouse has had a most extensive experience in the work of submerging cables, having being engaged in the business since he laid that across the Black Sea from Varna to Balaklava. He attended more especially this time to the construction of the coils and other work on the Niagara; and it is sufficient to say that he was one of the most efficient officers connected with the company. He was also on the Niagara last year, and, when his services were demanded, was always prompt, self-possessed and efficient.

MR. CANNING.

This gentleman is an English Engineer, and was one of the scientific corps of the expedition of August, 1858, who had charge of the work on the Niagara. Like Mr. Woodhouse, he has had a good deal of experience in the laying of submarine lines, having had the direction and superintendence of the first but unsuccessful attempt to submerge the cable across the Gulf of St. Lawrence, the undertaking having been defeated by a gale. Previous to this, however, he was engaged in connecting Spezzia with Sardinia by a line across the Straits of Bonfacio, and in superintending the union of Prince Edward Island with New

Brunswick by the same means. While in the Niagara, during the expedition of 1857, Mr. Canning was always ready in every emergency, and when the cable surged off the wheel, he succeeded by his quickness in getting it on twice without damage. In the final expedition, he was one of the numerous staff of the Agamemnon, and was among the most energetic and the most skilful.

MR. DE SAUTY

Is one of the most practical electricians in the employment of the company, and has had considerable experience in the working of both land and submarine lines. He was on the Niagara during the first expedition, Dr. Whitehouse having been too unwell to go to sea. Mr. de Sauty has been over six years engaged in telegraphing, the greater portion of which time he devoted his attention more especially to the laying of submarine lines and the construction of those erected on poles. The laying of the submarine cable across the Gulf of St. Lawrence was successfully accomplished under his superintendence—the first attempt, which was made in 1855, under the direction of Mr. Canning, having failed in consequence of a storm, during which they were obliged to cut the cable. Mr. de Sauty is entitled also to the credit of having put down the second Black Sea cable, which connected Varna with Balaklava. We may add that he was the first to employ the Morse instrument in submarine telegraphing. Mr. de Sauty is an Englishman.

MR. CLIFFORD.

Although occupying a comparatively subordinate position, Mr. Clifford is an engineer of great skill and ingenuity, and a draughtsman of more than ordinary ability and acquirements. He was connected with Mr. Everett as an assistant in superintending and forwarding the construction of the present machinery, in which work he rendered material service. The experience which he obtained from his connection with the engineering department of the enterprise during the first expedition was of great advantage to him, as it has proved indeed to all who were then connected with the undertaking. The putting up of the machinery on board the Agamemnon was effected under his direction, and he had partial charge of the laying of the cable from that ship. One of the main features in Mr. Clifford's character is his good, sound practical common sense, to which he appears to subordinate every thing, and which enables him to see things in their right light. Mr. Clifford is also a native of England.

MR. J. C. LAWS

Was at the head of the practical members of the electrical department, and has considerable ingenuity in mechanical matters. Mr. Laws is quite a young man, and has not long commenced his education in the science of electricity, but from the knowledge he has already acquired, he promises to become prominent among the electricians of England. He accompanied the Niagara on the last expedition.

MR. CHAS. T. BRIGHT

Is the Chief Engineer of the company, although he had nothing to do with the construction of the paying-out machinery used in the last expedition. He is a native of England, where he occupies a prominent position among scientific men. He is one of those who joined with Mr. Field in the formation of the Atlantic Telegraph Company, and rendered considerable service to the enterprise in the early stages of its history.

MR. WHITEHOUSE.

This gentleman is one of the principal electricians of the Atlantic Telegraph Company, and has devoted a great deal of time and attention to the submarine telegraph instruments and submarine telegraphing. He was originally a physician, but his devotion to this particular branch of science led him to abandon the practice of his profession, and to apply himself exclusively to electric telegraphing, particularly to experiments, having in view the invention of an instrument, by which to ascertain and register the velocity of electric currents through submarine cables, and the result of which has been the production of a machine, by means of which the possibility of transmitting messages through two thousand five hundred miles has been proved so conclusively, that it has put to rest all doubts that might have been entertained upon the subject. The instrument by which the speed of the "lightning" is calculated, is a triplicate Morse registering machine, upon which marks are made by means of an astronomical clock or pendulum, and by which signals are produced on the entering of the current into and its passage out of the wires, showing the retardation of the last current in going through great lengths. This is accomplished by a pendulum arrangement, beating seconds and making marks on the upper part of a strip of Morse registering paper, the middle marking style or electric pen being connected with the near end of the cable, and the bottom style being connected with the distant end. On a current being sent into the wire, it registers its passage immediately on the middle style, and, coming out of the wire, shows its passage by registering on the lower part of the strip of paper.

PROF. THOMPSON

Is a native of Scotland, and a man of high scientific attainments. He has devoted many years to the science of telegraphing, in which he has made some improvements. Prof. Thompson was at the head of the Electrical corps on the Agamemnon during the second and third expeditions. He is one of the Directors of the Company.

MR. J. W. BRETT.

From the prominent part this gentleman has played in the organization of submarine telegraph companies, he is known in England as the father or founder of them. This is in fact his great forte, and the many successful companies which have been established through his instrumentality is the strongest proof that can be presented of his ability in this important department. He obtained the first privilege from the French government of landing a cable on the shores of France, and connecting that country with England. He was present at the making and laying of it down, and assisted in the establishment of the Dover and Ostend, the Dover and Calais, the Spezzia and Corsica, the Sardinia and Corsica, and other lines of which he was mainly the originator. He was specially interested in the success of the Atlantic Telegraph, being one of the original projectors of the company.

MR. APPOLD

Is the inventor of the brakes, which have been so modified by Mr. Everett as to adapt them to the paying-out machine. He is an amateur mechanic, and possesses more than ordinary inventive powers. Having plenty of money, plenty of time, and nothing else to do, he occupies himself mostly in experiments of a mechanical nature. Mechanics are his hobby, and a machine shop has attractions for him that are irresistible. He is always inventing something, and is never satisfied except when working with iron. In fact this feature in his character is carried to such an excess as to become an eccentricity. His own house is full of evidences, of his peculiar inclinations. By some peculiar contrivance every gas burner is lit at the same time, and every window shutter closes with a simultaneous bang. These are but a few of the achievements of his genius when applied to domestic purposes, and his outdoor triumphs in the display of his inventive faculties are no less remarkable.

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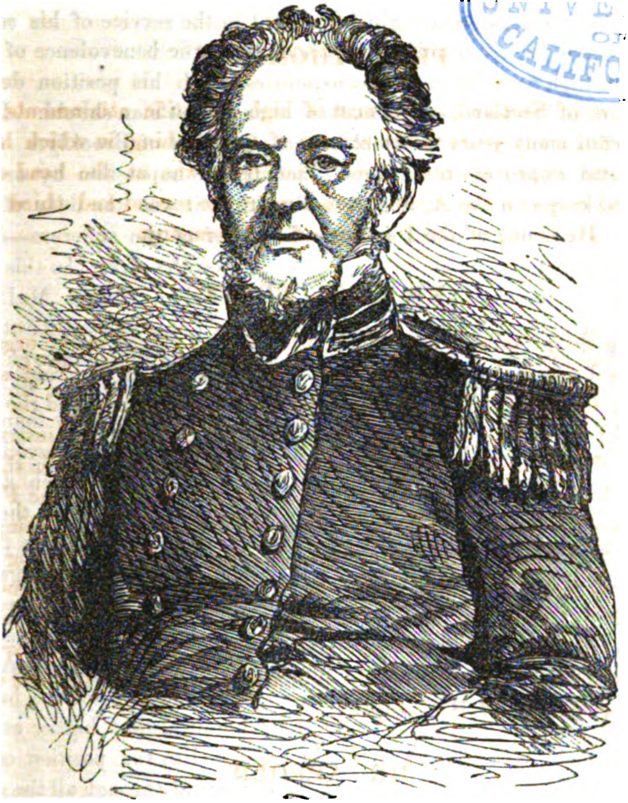


CAPTAIN W. L. HUDSON.

THE CAPTAIN OF THE NIAGARA.

Captain W. L. Hudson is already well known to our readers on account of the prominent part he played in the first expedition, and the important service he rendered on one occasion in saving the cable. Throughout the whole undertaking he took a most active interest in every thing that tended to promote its success. On the memorable evening of the 7th of August, 1857, when it seemed almost impossible to save the cable from slipping overboard after it had parted, and when the then chief engineer, Mr. Bright, had made no provision to meet such an emergency, he held the broken end on board for an hour with a hawser, until the splice was effected, and the work of paying-out could be resumed. Captain Hudson is one of the oldest and most respected officers of the American navy, and enjoys a high reputation for his abilities and judgment as a seaman, which are said to be of the first order.

During the forty-two years which he spent in the service of his country he was noted for his probity of character and true benevolence of heart. He has a high sense of the responsibilities which his position devolves upon him, and endeavors to meet them as an honest man should. During the terrible cholera year of 1832 he was a resident of Brooklyn. Seeing the fearful extent of its ravages—that it was impossible by ordinary means to keep it in check, and believing that it was the duty of every man to do all in his power towards the relief of the sufferers—he devoted himself to the noble work of attending on the sick. In this heroic task he was assisted by Mayor Hall, of Brooklyn, Bishop McIlvaine, and two other gentlemen. This committee of five would sally out every day to find out new objects for their assistance, and in their search would enter such houses as were inhabited by the poorer classes, who they rightfully supposed were most in need of their aid. If they found any of the occupants afflicted with the cholera they had them removed to the hospital or attended by a physician at their own homes. Each day the captain and the other members of the committee would visit their patients, note their condition, and when any of them died, see that the last rites were properly performed. At that time blood-letting was practised to some extent as a remedial measure; but as it was found to terminate fatally in many cases, it was abandoned. The Visiting Committee were, it is understood, among the first to adopt the use of ice, which was generally successful. Captain Hudson was never in active service, but who imagines that his claims to courage or heroism want higher evidence than what we have given? He was promoted to the position of Post Captain by the late Retiring Board, having served through all the grades. When the pirates of the Grecian Archipelago had become so bold and audacious in their depredations upon American commerce as to call for determined and prompt action on the part of our government, he occupied the post of sailing master on board the sloop of war Warren. After this he made a four years' cruise in the Peacock, one of the vessels of the Exploring Expedition under Commodore Wilkes, which was subsequently lost in the quicksands of Columbia river. Not a soul on board, however, was lost. While on this cruise the Peacock was placed in many a perilous position, and on several occasions would inevitably have been wrecked amid the ice but for the coolness, self-possession and seamanship of her commander. Previous to his taking command of the Niagara, Captain Hudson held the post of Commander of the Brooklyn Navy Yard, which he occupied over six years.

THE CAPTAIN OF THE AGAMEMNON.

A change took place in the command of the Agamemnon since 1857, her former commander, Mr. Noddall, having been recently appointed to another post. The gentleman who now occupies this responsible position is George W. Preedy, who holds the rank of Post Captain, and who is some twenty odd years younger than Captain Hudson. The difference in age and yet the quality in rank in both these cases is explained by the fact that while in our service seniority is almost always the only rule for promotion, favoritism, and distinction in service of any consequence, generally leads to elevation in rank in the British navy. The difference in the ages of the two Post Captains need not therefore be a subject of astonishment. Captain Preedy has served over twenty years in the British navy, and is now about that middle age which those who profess to know every thing about the matter—and who, it is to be hoped, are fully informed—say that a man is in full possession of all his physical and mental powers. The age is fixed somewhere between forty and forty-five, the very summit of the hill, which is always regarded as an emblem or figure of life. The captain of the Agamemnon was in the Baltic fleet during the Russian war, and served in the capacity of commander on board the Duke of Wellington, one of the largest propellers in the English navy. He is regarded in the service to which he belongs as an admirable seaman and navigator, independent of which his many fine qualities as a man have acquired for him a well deserved popularity. He takes a special pride in the work to which he has been appointed, and to which his qualifications as a commander have been one of his principal recommendations.

During the fearful gale of eight days which overtook the telegraph squadron while on their way to mid ocean, his ship was placed in imminent peril. There never was an occasion that required more coolness and self-possession, and Captain Preedy proved himself fully equal to the emergency. For eight long and anxious days and nights she was buffeted by the fierce storm, but the gallant captain and his brave officers battled with it to the end, and saved their ship and its precious freight in the midst of dangers that might well appal the stoutest hearts. All honor to the heroic commander and to the gallant officers and crew who so nobly seconded his efforts.

THE CAPTAIN OF THE GORGON.

The British Admiralty have certainly shown a great deal of judgment in the appointment of the commander of the Gorgon. It was a matter of some importance to the Atlantic Telegraph Company that this officer should be assigned to the post, in consequence of the prominent part he performed last year. He rendered important service by soundings which he took on the plateau, and the new sources of information which he opened to scientific investigation. In the report which he made of the work, he has shown himself to be a man of extensive acquirements and of a liberal and generous mind—a character which is rarely met with, and is, therefore, the more to be prized. After referring in a modest and moderate manner to the way in which he acquitted himself of the task he was intrusted with, he speaks of his indebtedness to Lieut. Brook and the use of his "ingenious sounding apparatus;" alludes to the assistance he obtained from his own officers in complimentary terms, and acknowledges the aid he received from the mechanics in the preparation of the machinery for the work. It was Commander Dayman, it may be remembered, who made the sounding at the time the cable broke in August, 1857, and reported the depth at 1,950 fathoms. Soon after his return and the presentation of his report he was promoted from the rank of lieutenant to that of commander, and still further rewarded by being appointed to the command of one of the vessels detached for the expedition. Exclusive of the service which he has performed in connection with the present enterprise, he is looked upon as one of the most accomplished officers in the British navy, and is reputed to be a gentleman of very fine scientific attainments. The result of his soundings on the plateau are very clearly set forth in his report, which is an unpretending, unaffected statement of all the details. He is the only one of the English commanders of last year's expedition who has been reappointed.

CAPTAIN W. C. ALDHAM.

This gentleman is the captain of her Majesty's steamship Valorous, which accompanied the Agamemnon while laying the cable. He is considered one of the most efficient officers in the British navy, and is a general favorite among all who know him in the service.

CAPTAIN HENRY C. OTTER

Is one of the junior Post Captains of the British navy, being about forty years of age. He commanded one of the surveying steamers in the Baltic during the Russian war. He has but recently been assigned the command of the Porcupine, which is one of the smallest steamers in the English navy. Captain Otter met the Niagara while on her way up Trinity Bay, and piloted her up the Bay of Bulls Arm, the landing place of the cable.

THE NEWFOUNDLAND SUBMARINE TELEGRAPH.

THE AUXILIARY TO THE ATLANTIC LINE.

The laying of the submarine cable across the Gulf of St. Lawrence would have been accomplished in August, 1855, but for a most unfortunate accident, or rather series of accidents, which postponed the completion of the work for another year. The steamer James Adger was chartered by the New York, Newfoundland, and London Telegraph Company to tow the vessel in which the cable was coiled, and which it was supposed was then awaiting her arrival at Port au Basque, a small fishing village on the southern coast of Newfoundland. The James Adger left New York at ten o'clock on the morning of the 7th of August, and as it was intended by the Company that the voyage should be one of pleasure as well as business, they invited a large party of their friends, to whom we shall without further ceremony introduce our readers:—Peter Cooper, Mrs. Cooper, Prof. S. F. B. Morse, Mrs. Morse, Master A. B. Morse, Cyrus W. Field, James S. Sluyter, Robert W. Lowber, Mrs. R. W. Lowber, Miss Ann Redfield, Rev. Gardiner Spring, Rev. D. D. Field, Rev. H. M. Field, Miss Gracie Field, Miss Alice Field, Miss Allen L. Herndon, Dr. Lewis A. Sayre, Mrs. Lewis A. Sayre, David A. Sayre, Wm. M. Swain, Master W. J. Swain, John Thornley, Prof. F. Sheppard, Bayard Taylor, Miss Lizzie Alger, John Conger, Rev. J. M. Sherwood, Mrs. Ann Palmer, Mrs. Edward D. Jones, Miss Mary Sterns, Marshall Brewer, F. N. Gisbourne, Chas. T. Middlebrook, John Mullaly, T. W. Strong, D. C. Hitchcock, S. A. Richards, B. F. Ely, H. W. Barron, Geo. H. Brown, A. A. Raven, F. O'Brien, F. H. Palmer, J. P. Palmer, Chas. J. Smith, Dr. P. A. Bruyere, John G. Kip, Chas. H. Houghton, J. W. Kennedy, Francis Winton, L. P. Palmer, Joseph Jones, Miss Cooper, Robert Russell.

The weather on the morning of which we have spoken was all that could be desired; the sun shone out in an almost cloudless sky, and the light breeze that rippled the surface of the water served only to moderate the intensity of the summer's heat. Every thing seemed to favor the enterprise, and the crowd that thronged the deck of the steamer were buoyant with bright and hopeful anticipations of the future. There was an unusual bustle on Pier No. 4, North River, that morning; carriages came dashing down with heavy luggage and light-hearted passengers; every body was in every body else's way; people stood upon each other's toes, and, strange to say, smiled good humoredly; porters with atlantean shoulders carried off trunks and portmanteaus of all imaginable shapes and sizes, and deposited them in the most out-of-the-way places; newsboys were eagerly soliciting customers for the morning papers; venders of light literature were loud in their praises of "the Blood-red Avenger," "The Desperate Burglar, or the Miser's Fate," "The Bandit's Cave, or the Robber's Oath," and a host of other works equally taking and terrible; friends congratulated friends, and wished each other a happy voyage and safe return; scientific men looked graver and more important than ever, and pronounced their opinion for the hundredth time how "that cable" should be laid; and loud above the din and bustle and confusion rose the shrill whistle of the steam-pipe, announcing that the moment of departure was near.

"Let go that hawser there," shouted several of the hands as they made ready to start, and the passengers, who had till this time been in complete possession of the deck, at once gave way. Then there was a general shaking of hands, "a hurrying to and fro," the last passenger arrived on board after losing his hat and cane in his desperate struggle to be in time, the last rope was unfastened, the steam whistle gave out its last warning note, every body was told for the last time to "look out," and the James Adger commenced slowly moving out into the river. Three hearty cheers greeted her as she swung loose from the pier, and were repeated again and again as we swept past. A salute of three guns was fired from her bow, which was responded to by another from one of Spofford & Tileston's Steamers, and the United States frigate Potomac honored the company and the enterprise in which they were engaged, as far as the strict rules of the Navy allowed, by running up the Stars and Stripes to her peak. Again and again we were cheered by our friends who crowded the end of the pier, until only the faint echo of their voices could be heard, and again and again we responded with a rivalry of friendship that was determined not to be outdone.

We were soon under full headway down the bay, and in a few minutes our friends became indistinguishable in the lengthening distance. The last we saw of them was through a telescope, and there they still stood at the end of the pier waving their adieus. Gradually we lost sight of the large public buildings, and then the city itself began to disappear below the horizon. And now we have left Staten Island behind us, and sweeping past Nevisink are out upon the open sea.

Our first night on the water was marked by a grand display of celestial pyrotechnics that illuminated the whole heavens, and converted the liquid element through which we ploughed our way into an ocean of fire. It appeared as if the powers of the air had determined to signalize our mission, and they did so in a peculiarly appropriate manner. The scene was one of those which could never be forgotten. During the evening an electric machine was brought upon the upper deck, and it was there when the night set in. Beside it sat Professor Morse, its inventor, who had been explaining the principle of its construction to the company but a few hours before. Here and there were little groups, some on the bow, some on the wheel-house, and others scattered about the deck enjoying themselves in pleasant social intercourse. The sweet music of woman's voice singing some favorite melody gave a new attraction to the scene. At first the lightning flashed in broad sheets along the horizon, then rapidly extending towards the zenith it lit up the sky with an almost dazzling brilliancy. From behind the dense heavy masses of black clouds that hung on the ocean's verge were flung, as if by unseen hands, huge balls of fire that left a track of flame to mark their course along the heavens. At intervals gigantic fiery serpents darted from their place of ambush, writhing and twisting in their tortuous way through the ebon vault above, and then again all was dark as midnight. Gradually the clouds spread over the sky, shutting out the pale and twinkling light of the stars, and the flashes of lightning became more vivid and more frequent until the whole heavens was one mass of flame. For two hours we gazed on this magnificent spectacle, until the heavy drops of rain warned us of the coming storm and drove us unwillingly to seek shelter from its fury.

That night we had a concert in the after cabin at which every body was present, and in which all who had voice for music and some who had not, joined. Some of the best airs from Robert Le Diable, and other popular operas, were sung with the most exquisite taste by one of our lady passengers, and then, to give variety to the entertainment, we had the choicest selection from Negro Minstrelsy. "Robert toi que j'aime," was followed by the "Dandy Broadway Swell;" and "The Colored Fancy Ball," shared the applause with "Come per me Sereno." The sailor's farewell to his lady-love was sung by a votary of the comic muse, and although evidently a pathetic subject, and one in which the aforesaid fair one and her "galliant" lover claimed the sympathy of the hearers, the tale of their distress was heard with the most unfeeling indifference, and the end of each verse was the signal for an outburst of laughter. This from a company, too, that should have known better was, as Dogberry says, "most tolerable and not to be endured." There was one portion of the song which in justice to the composer we must quote, as it is in its way a perfect gem, and will serve to show the reader at a glance the sad plight of the lovers:

> "While you are on your sheutle bed ashleepin' fast ashleep,
> Zen we poor jolly sailors are ploughing on ze zeep."

The reader will perceive from this that the song is slightly foreign, and that "the Sweet German accent" is one of its most attractive features.

But the concert like all other sublunary things had an end, and all retired for the night to dream over the pleasing scenes and incidents of the day. The strains of music gradually died away, the merry laughter of the gay and light-hearted company was hushed, and the only sounds that broke the stillness of the night were the monotonous dash of the waves and the ceaseless din and clangor of the mighty machinery.

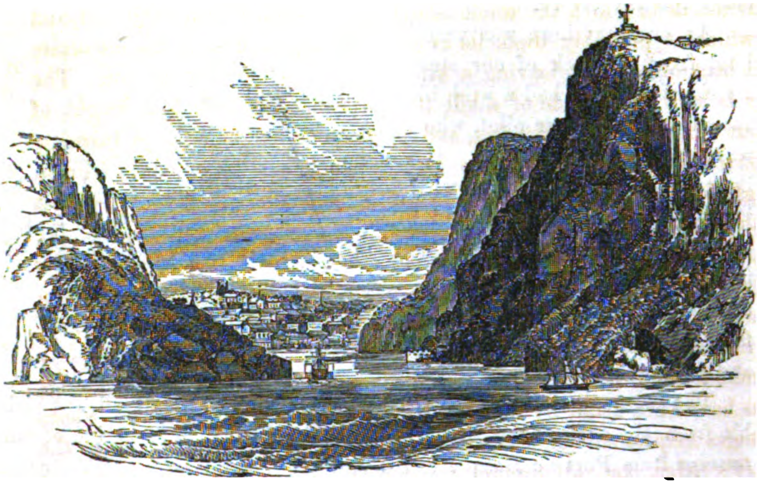
Early on Sunday morning, the 12th of August, we came within sight of Newfoundland, and as may be supposed, there was considerable excitement on board. There it lay like a dark cloud on the horizon, and there were sage speculations among those who professed to be learned in nautical matters, as to whether it was really a cloud or the Island itself. Grave arguments were held on the subject, always terminating, however, with the unsatisfactory conclusion of "wait and you'll see," which we all philosophically concluded to do, as it was the only course left. Gradually the cloudy indistinctness of the land disappeared, and as the more prominent points of the coast became visible, not a soul could be found who didn't believe it was real, genuine, *bona fide* terra firma from the very commencement. About five hours before we reached Port au Basque, where it was expected we would find the Cable Ship, the bold promontory of Cape Ray, which is the extreme south-western limit of Newfoundland, was visible from the deck of the steamer. All the telescopes on board were brought into requisition, opera glasses were in great demand, and those who were not so fortunate as to possess either, strained their eyes looking through spectacles and spy-glasses in the vain hope that they would see something like a ship twenty miles off, and firmly believing that that ship when found would be the very one we were in search of. We could perceive the fishermen's huts when within a distance of eight or ten miles, but no vessel except a few fishing smacks greeted our anxious gaze. It was suggested that as a portion of the harbor was hidden from the view by high rocks, she might not be visible from sea; but even that hope was dispelled when we arrived at its entrance. Two schooners were lying at anchor there, but the Cable Ship had not made her appearance, although they were expecting her arrival over two weeks. A vessel was seen on the morning of Saturday answering to the description of our ship standing off Port au Basque; it was blowing so hard, however, and the wind was so adverse, that she was obliged to put to sea again.

This was a great disappointment, as the weather was most favorable for the laying of the cable, and as we intended to begin work at the earliest hour on Monday morning. In this dilemma we could do nothing but either await the arrival of the Sarah L. Bryant, or go direct to St. Johns, which we intended to visit before our return to New York, pay our respects while there to the authorities of Newfoundland, and after a brief stay, call at Port au Basque again, where it was confidently expected we would find the object of our search if she had not foundered at sea. We lay outside the harbor three or four hours to land some articles which were required in the construction of the telegraph at that point. Some of the members of the Company went ashore, where they were met by Mr. Canning, an experienced engineer from London, who was engaged to superintend the laying of the cable. He confirmed what we had heard about a vessel having been seen off the coast the day before.

As our stay here was very brief, and as many of us only saw the land from the deck of our steamer, we could form no correct idea of its character. It had a wild, bleak and inhospitable look, however, and the account that our pilot, who had visited it frequently, gave us of it was any thing but pleasing. It was, he said, nothing but rock and bog, interspersed here and there with deep holes and quagmires, which, he jocularly informed us, it would be much easier to get into than to get out of. But after all, the majestic hills that towered to the height of fifteen hundred feet above the ocean, the huge masses of rocks that lined the coast, and the restless sea, whose waves broke in foam at their feet, imparted to the scene a sublimity that all the bogs and quagmires and holes could not affect.

The greater portion of the southern coast of Newfoundland was visible from the deck of our steamer during nearly the whole period of our passage from Port au Basque to St. Johns. The character of the coast scenery was the same throughout, presenting to the eye of the voyager nothing but bold rugged cliffs, which in some places rose precipitously out of the water to the height of three or four hundred feet. On the morning of the 14th of August, about seven o'clock, we were within a few miles of our place of destination. Every body was up early, for we had heard so much of the harbor of St. Johns and the approach to it, that we determined to see all that was to be seen.

The morning of our arrival, unfortunately, was rainy, and, as may be supposed, the city did not appear to the best advantage; but the grandeur of the surrounding scenery, and especially that of the coast, more than made up for the annoyance we felt in consequence of the weather. The island is protected on the east by the same bold mountainous line of coast which we had observed all along its southern extremity. Steep rocks rise to the height of seven and eight hundred feet almost perpendicularly out of the water, which is so deep that the largest vessel might pass alongside within a few feet with perfect safety. In some places their front is scarred by deep seams which extend from their very summits, not unfrequently terminating in huge caves at their base. We felt the strongest curiosity to enter some of these, and make explorations in their hidden recesses, but had no opportunity of doing so, and were obliged to leave without gratifying our desire. They were just such caves as we had read of long ago in our days of novel reading, recalling to mind the thrilling adventures of pirates and smugglers, with their long, low, black schooners.



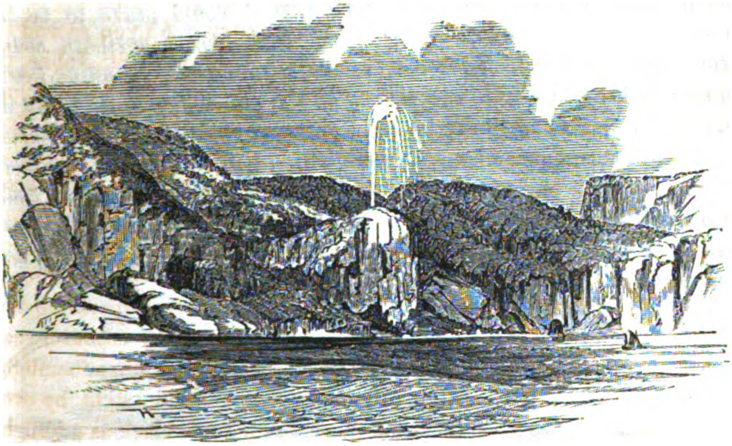
ENTRANCE TO ST. JOHN'S, N. F.

The entrance into the harbor is so concealed from the view at sea, that we could not perceive it till within a distance of half a mile. On the right rises Signal Hill, to a height of at least six hundred feet, overlooking the town, and commanding a fine view of the country, which extends behind it like a gigantic panorama. The summit of this hill is crowned with a fortification, and at its base is another, neither of which, in their present condition, would be capable of resisting a well sustained attack by sea and land. The entrance or Narrows, as it is called, is, however, well defended by other forts, and in the last war, it was protected by an immense iron chain extending across and fastened to the rocks on either side. The marks left by drilling holes in the rocks are still visible, as are also the remains of an old cannon and anchor which had served as holdfasts for the chain. Opposite Signal Hill, on the other side of the Narrows, rises another hill, or mountain, as it should more properly be termed, to an elevation above the level of the water of over six hundred feet. On the other side of this, and about one hundred and fifty feet from its base, another fort has been erected, in the centre of which stands the light-house. While passing this point we were hailed by a soldier, who inquired where we were from, and how many days we were out, and having answered him, we gave the good people of St. Johns notice of our approach with a thundering salute that was repeated a hundred times by the echoing hills. The Narrows is about a third of a mile in length, while it varies in width from three to fifteen hundred yards, and was doubtless formed in one of those terrible convulsions to which the whole island seems to have been subjected, and to which it probably owes its origin. It appeared as if the mountain had been torn apart, leaving a safe passage open to the harbor. The city is built on the side of a hill that ascends gradually to a height of about a hundred and fifty feet, and presents an exceedingly picturesque appearance. It overlooks the harbor, which is a little over a mile in length, and a quarter of a mile in width; and which is one of the best in the world, affording at all times a safe anchorage for ships of the largest dimensions. The first thing that strikes the visitor is its peculiar formation. After you have passed the entrance it has the appearance of a lake, so completely is it shut in from the ocean. Gigantic hills tower above you on every side, except that on which the city stands, and on their rough and rugged declivities little patches of gardens have been made by the more industrious of the fishermen, whose cottages help to subdue the natural wildness of the scene. Near the water's edge, and all around the harbor, are erected the stages or "flakes" as they are termed, on which the codfish are cured.

The town of St. Johns has no public buildings that can lay claim to architectural pretensions, with the exception of the Catholic Cathedral, which is a large and imposing edifice, built in the style of the Roman Basilica, and capable of holding ten thousand persons, or little less than half the population of the whole city. It cost about five hundred thousand dollars, and has several fine pieces of sculpture, among which are two or three of the best productions of Hogan, the celebrated Irish sculptor.

The Colonial Building, as the structure in which the legislative business of the Island is transacted is called, was built a few years ago at an expense of about two hundred thousand dollars. It is a square granite building, two stories high, with a large portico in front, supported by six Ionic pillars. It contains the chambers of the two legislative branches, the House of Assembly and the Legislative Council, besides the library and a number of smaller apartments. A short distance from the Colonial Building is the Governor's house, in which Chas. H. Darling, the then Governor of the Island, resided. The country around St. Johns is remarkable for the diversity as well as the beauty of its scenery. In the afternoon of the day on which we arrived, a party of us enjoyed the luxury of a ride along an exquisite little valley called the Vale of Riverhead. The roads, which branch out in every direction from the city are, without the least exaggeration, among the finest in the world; and Topsail Road, which runs along the side of one of the hills that form the boundary of this valley, affords one of the most delightful drives in this part of the country. As you ascend the more elevated parts of it you can see the whole town of St. Johns, the harbor which lies at its feet, and the lofty crest of Gibbet and Signal Hills, towering in the more remote distance, beyond which the deep blue of the Atlantic is visible through the huge gaps of the coast mountains. Below you, almost at your feet, lies the Vale of Riverhead, forming in its quiet beauty a marked contrast with the wild mountain scenery by which it is surrounded. A small stream fed by tiny rivulets from the rough sides of the mountains pours its clear waters through the centre of the valley, making sweet music as it sweeps sparkling over its rocky bed. In some places its course is broken by miniature cascades, that glitter like a shower of diamonds in the warm sunlight, while in others it is almost wholly concealed from the sight by overhanging trees, beneath whose shade its waters become black as midnight. It is a trout stream too—just such a one as Walton would have delighted to angle in. Beautiful little cottages dot its banks, and here and there may be seen, through the jealous foliage that clings around them, the more imposing mansions of the wealthier inhabitants of St. Johns. It is a lovely scene, and might have tempted a less ardent admirer of the beauties of nature than we professed to be, to linger a few weeks among its attractions. But necessity—"stern necessity," as the poet calls it—interposes: the cable must be laid, and in a few days more the charming Vale of Riverhead will be lost to our view, perhaps forever.

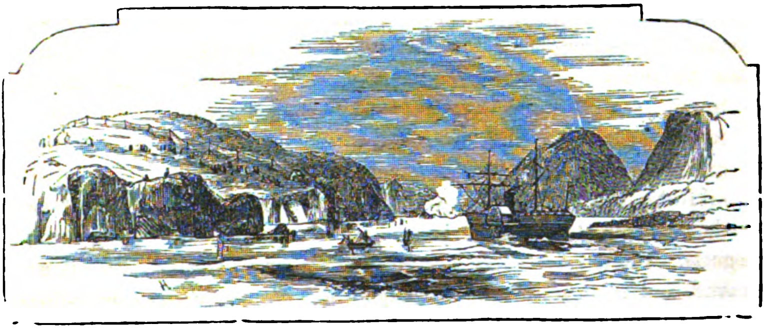
Saturday, the 18th, was the day fixed for our departure, but still we were unwilling to leave till we had made some return for the hospitality we had received from the people of St. Johns. The Company, therefore, invited over two hundred of the principal inhabitants of the city on an excursion about ten miles outside the harbor; and about twelve o'clock we set out with one of the most pleasant and sociable parties that was ever collected on the deck of a steamer. The day was as fine as could be desired, and the scenery of the coast magnificent. We saw the "Spouting Rock" as it is called, which is one of the greatest natural curiosities in the island, and, perhaps, in the world. The rock itself is not more than thirty feet above the surface of the water, and has a cavity in its centre which runs through it to the base, and which is from six to seven feet in diameter. A small stream of fresh water flows from an overhanging hill into this cavity, and when the tide is out finds its way through an opening in the rock into the sea. When the tide is coming in the waves rush with such force into this hole as to throw the fresh water in the cavity to a height of twenty, and sometimes forty feet.



SPOUTING ROCK, NEAR ST. JOHNS.

After a pleasant trip of two or three hours along the coast we returned with our guests to the harbor, where we parted with many mutual regrets. Cheer after cheer was given and returned, handkerchiefs were waved, and when we could hear each other no longer, the cannon thundered out our adieus. While passing through the narrows, Mr. Huested, who was engaged by the Company to blast the Merlin Rock, which lay right in the way of vessels entering the harbor, and which was very dangerous to those of the largest class, got up a grand submarine explosion for our especial entertainment. We had hardly passed over the rock when the explosion took place, throwing up a vast body of water to the height of sixty or seventy feet, and shaking the mountains on either side like an earthquake. Our vessel trembled with the concussion, and the spray fell in a shower upon the deck, sprinkling a number of our passengers, to the great amusement of those who escaped. On clearing the Narrows a parting salute was given as our bow turned in the direction of Port au Basque, where we expected to find the Sarah L. Bryant awaiting our return.

About five o'clock on the morning of the 20th of August, we came within sight of Cape Ray, and about seven o'clock were sufficiently near to Port au Basque to discern objects through the telescope. Some of our company went aloft, and gave us the cheering intelligence that they saw a large vessel lying behind the high rocks which protected the entrance to the harbor, but we were afraid to hope lest we should be doomed to a second disappointment. There was no doubt, however, as to a vessel being there, for she had been seen also through the telescope; but it was confidently believed by some that it would prove to be the French frigate, Iphigenie, which, it was said, took a northern course after leaving Halifax. In fact, every one, even the most sanguine, feared to hope. While we were speculating on the probability of its being the Sarah L. Bryant, a small row boat was observed approaching our steamer and in less than half an hour we were within hailing distance. Among those in it was Mr. Sluyter, the captain of the Victoria, which could also be seen lying in the harbor. Mr. Field, who, with several others, was on the bow of the steamer anxiously awaiting their approach, now hailed them.



HARBOR OF PORT AU BASQUE.

"Has the bark arrived?" he cried out, in a stentorian voice.

A wave of the hat was the only reply; but it was enough, and one wild, enthusiastic hurra broke from those on board the James Adger.

"Hold on, hold on," said Mr. Field, "wait till we are certain."

Then repeating his question, he was answered in the affirmative. The company were all impatience to give vent to their enthusiasm, but they restrained their feelings for a few moments longer.

" When did she arrive ? " he asked.

" On Wednesday," was the reply.

This was sufficient, we were amply repaid for the anxiety we suffered, and three such cheers as followed the glad tidings has seldom been heard. After all, we had not come from New York on a fruitless errand, and we would yet, if favored a little longer, be enabled to lay the cable which is to be the first link in connecting the Old World with the New, and bringing the people of both continents into instant communication with each other. After all, we could tell our friends on our return that we had accomplished the great undertaking, and that the first important submarine telegraph had been laid on this side of the Atlantic.

We had now reached the entrance to the harbor, and could distinctly see the masts of the long expected vessel towering above the rocks, with the stars and stripes flying from her mizzen peak. In a few minutes more we gave her a salute from our cannon, and ere the echoes died away among the distant hills, the little Victoria responded again and again, till she was completely enveloped in a cloud of smoke. It was a grand sight for the people of Port au Basque, the quiet of whose little village was never before disturbed with such boisterous rejoicing. A number of children were amusing themselves on the side of the hills which bound the harbor, and enjoying the scene before them with the greatest zest, but the first report set them scampering like a flock of frightened deer, and fearing a second attack, they disappeared like magic. In a few minutes we were anchored alongside the bark, and all was excitement and bustle among the passengers. We all wanted to go ashore, but as the number of boats was not equal to the demand, many had to remain on board. It was soon ascertained that it would be impossible to commence the work of laying the cable for two or three days, so that there would be an opportunity for every one to gratify their desire. The Sarah L. Bryant had, it appeared, very tempestuous weather, and for twenty-six hours was exposed to all the fury of a terrible gale, during which her hatches were battened and she was running under bare poles.

On the arrival of the James Adger at Port au Basque, we found that the mechanical arrangements on board the Sarah L. Bryant, for the laying of the cable, were not completed. It was resolved, under these circumstances, that the steamer should go to Cape North and select the best and nearest portion of the coast to Cape Ray, the point of connection. Mr. Field and some sixteen or eighteen of the passengers remained at Port au Basque till the return of the steamer, and as we

PORT AU BASQUE.

were among those we took advantage of the earliest opportunity to visit the bark, which was about five hundred tons burthen, and strongly built. The cable itself weighed four hundred tons, and was seventy-four miles long, while the distance between the points of connection on Newfoundland and Cape Breton is sixty-five. The extra nine miles were allowed to make up for the inequalities in the bottom of the ocean, and any variation that might be produced in the direct line by the wind or currents. The cable lay in immense coils in the hold of the vessel, and the operation of coiling alone took fourteen days. The machinery was very simple in its construction, and was the same that was used in laying the Mediterranean cable. The cable as it came out of the hold passed over iron rollers, and from these between vertical guide rollers, from which it passed again over two large wheels, each eight feet in diameter. As these revolved it was thrown out on a cast iron saddle, over the stern of the vessel. The wheels were supplied with four brakes, worked by two long levers and two compressors, which were employed to prevent the cable from surging as it passed round the wheels, as well as to prevent it from running off by its own weight. These completed the whole of the machinery.

The morning of the 22d of August the Sarah L. Bryant was towed by the Victoria up to Cape Ray Cove, which was decided upon as the starting place, being nearer by five miles to Cape North. There was also another great advantage it possessed over Port au Basque: it had a fine sandy beach, which experience has proved, forms a better and safer resting place for the cable than rocks. Once it becomes imbedded in sand, it may lie there for a century, but if exposed to friction on rocks, it would be worn away or cut through in less than a year.

It was found necessary to remove the telegraph instruments from Port au Basque to the point selected on the beach of Cape Ray Cove, which in itself was a most tedious and laborious work. As a number of

THE TELEGRAPH FLEET IN A GALE.

the passengers volunteered their assistance, however, it was expedited, and by twelve o'clock every thing was transported to the place designated. Here it was decided to erect a frame house, which was an undertaking of no small magnitude when the limited means and facilities of the place are considered. The Victoria was employed in carrying the frame and timber for the purpose from Port au Basque, but when she arrived with them at the Cove it was found that she could not approach within several hundred feet of the shore on account of the shallowness of the water. They were obliged under these circumstances therefore to form a raft, and on it to land all the timber required for the building of the house. The largest planks were accordingly thrown over the propeller's side, lashed together with ropes in the form of a square, and on this was placed the frame work, the shingles and the other parts of the structure.

CAPE RAY.

After an hour's hard work, in the course of which the raft gave way two or three times, they succeeded in getting all the timber upon it and attaching it to a boat prepared to tow it ashore. The progress made in rowing was rather slow, but they at last succeeded by hard tugging and pulling to get it within fifty or sixty yards of the beach. Here, however, the waves were so high, that it was considered by some exceedingly perilous to land in the midst of them; but as the whole shore was lined with breakers, and it became evident that there was no other resource, they went to work in utter defiance of the danger.

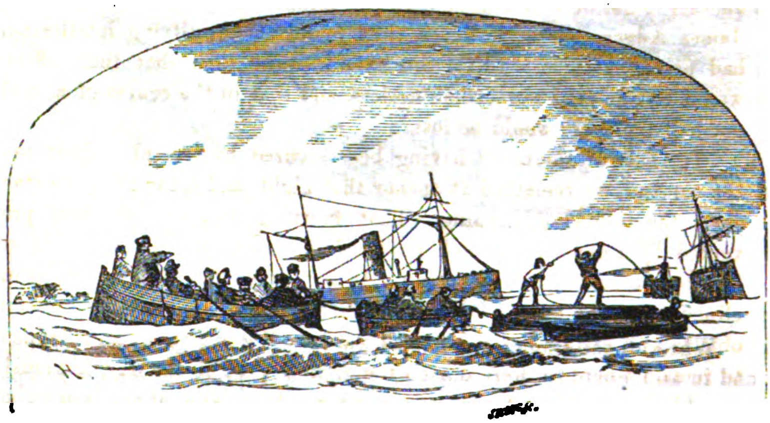
"Row ahead," said Captain Sluyter, who was on the raft with one of his crew, "row ahead." The fishermen pulled with might and main, and in a few minutes after the order was given, they were in the midst of the breakers, which threatened every moment to swamp the boat. They saw they were in for it now, and as there was no retreating, they rowed with redoubled energy; but the raft, which had held together better than was expected after leaving the side of the steamer, now exhibited strong symptoms of going to pieces, and it had hardly got in among the breakers before it parted in the centre, leaving Captain Sluyter on one portion and his assistant on the other. Their position became every moment more dangerous, as the planks on which they stood were very slightly secured, but by the most unremitting exertions they succeeded in keeping them together, and in getting safely ashore. A large portion of the timbers would doubtless have floated off with the receding tide had it not been for those on shore who rushed up to their armpits in the water, and not without some risk, hauled them up on the beach. In this they were assisted by the dogs, which seized the planks in their teeth, and although sometimes over a hundred feet out, swam ashore with them.

TAKING THE RAFT ASHORE.

When all the timber was landed the frame of the house was put up, and in an incredibly short space of time it was prepared for the reception of the batteries and other telegraph instruments. A deep hole was dug in the centre of the building, and in this was sunk a heavy piece of timber about the thickness of an ordinary capstan. A hogshead was placed over this again, and the intermediate space between it and the capstan, as we shall call it, being filled up, it was rendered so firm that it would hold the largest vessel in a gale of wind. Around this the cable was to be wound, and although the straining produced by it was comparatively slight, it was considered necessary to have it well secured in case of emergency.

Every thing was now prepared and in readiness for the laying of the cable, which was commenced on Thursday, the 23d of August.

It was a most exciting scene, although attended with little danger to those employed in the laying and paying out of the line. The Sarah L. Bryant was lying a little less than a mile from the shore, and the steamer Victoria about half that distance. A sufficient quantity of the cable was taken from her hold and placed in the form of a coil upon two boats lashed together. This was performed with little difficulty; but the towing of it ashore was a most critical task, and required all the attention and care of Mr. Canning. It was impossible, without imminent risk, to employ either the James Adger or the propeller in this part of the work, as neither could approach sufficiently near the shore to land the cable. It was therefore decided, as the only safe and practicable plan, that the boats should be towed ashore by two others manned by fishermen, and some of the hands from the steamers. As soon as the cable was placed on board the boats, they were taken in tow, and then commenced the tedious process of paying out. Its whole weight was about four tons, and as it had to be paid out with more caution than would be required in laying it from the ship, at least five hours were consumed in landing and placing it in connection with the batteries.



TAKING THE CABLE ASHORE.

When the boats having the cable on board commenced paying it out, they moved so slowly that their progress was hardly perceptible from the deck of the steamer. It was known that the work had begun, but, unfortunately, the James Adger was too far off to allow the company on board to see what was doing. A portion of the most enthusiastic volunteered their services, and having procured one of the steamer's boats, assisted in towing. They were determined on sharing the glory of the undertaking, that they might hereafter have the gratification of saying that they were among those who laid the great submarine cable on this side of the Atlantic. They worked hard for two or three hours, and did not give up till they saw it successfully landed; then giving three enthusiastic cheers, which were answered in the same spirit by those on shore, they started for the steamer with the gratifying intelligence.

"Now boys," said one of the party, "let us be the first to bring the news, and we will call ourselves the Submarine Telegraph Express, for the occasion." A general assent was given to this proposal, and away they started for the James Adger, making their little boat fly over the waves in their impatience to reach the vessel. As they passed the propeller one of the hands hailed them and asked the news.

"What is the matter?" he inquired. "Have they got through? Is all right?"

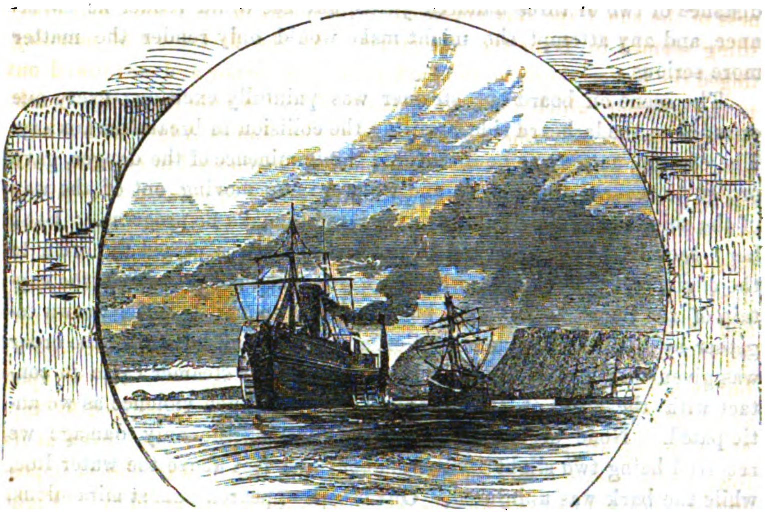
"Yes," they all replied in one voice; "the cable is landed—all right. Let us have three more cheers—hip, hip, hurra." And three more cheers were given that made the welkin ring. While passing the Sarah L. Bryant the same question was asked, and the response greeted with another burst of enthusiasm. In ten minutes they were on board the James Adger, where, however, they found the gratifying intelligence had preceded them. Little did they imagine then that their efforts would be rendered worse than useless, and that in the course of a week one-half the cable would be lost.

The end of the cable having been secured by several coils around the capstan, we remained at anchor that night, and made ready to start early the following morning. That morning, however, we were prevented by a dense fog, which rendered it exceedingly dangerous for us to attempt such an undertaking. In fact, if we felt ever so much inclined, it would have been almost impossible, as we could not discern objects at a distance of a hundred yards. We were obliged, therefore, to remain where we were during the greater part of the day, anxiously watching every sign of a change in the weather. One of our boats, containing seven or eight persons, ventured out, and having mistaken the direction of the land, came very near being lost. The error, however, was discovered before the steamer was out of sight, and corrected immediately. Up to eight o'clock that evening no change had taken place in the weather; and we began to lose all hope of the fog clearing away that night. About nine o'clock, however, we caught faint glimpses of the moon through the murky atmosphere, and in a few minutes more we could see her dimly, as through a veil. Slowly the fog began to disappear, and in the course of an hour we discerned the ship and propeller lying on our larboard bow, and about one-fourth of the distance between us and the shore. A light breeze sprung up which assisted in clearing the atmosphere, and there was every indication that we would have fine weather in the morning for the prosecution of our work. At last, after knocking about here for four or five days, we had a favorable prospect of getting away, and we congratulated each other on our good fortune. In two days more, and with a continuance of such weather, we would be at Cape North with the end of the cable, and ready to start for home. But here, again, we were doomed to disappointment and to a longer stay off this bleak and desolate coast. The breeze to which we were indebted for clearing away the fog, freshened near midnight, and before daybreak blew a perfect gale. Notwithstanding the state of the weather, it was decided to start in the morning, and about six o'clock we accordingly weighed anchor and made ready to tow the ship to sea. All this time we were under shelter of the land, and although it blew with great violence, the waves ran low. Having succeeded, after the greatest difficulty, in attaching the Sarah L. Bryant with a hawser, we prepared to tow her, but in this we were prevented by another obstacle. It was found, after repeated attempts, impossible to raise her anchor; and, having no other alternative, her captain was obliged to slip it, having previously attached a buoy to the chain to mark its location. All this time the submarine cable held on securely to the ship, although subjected to a great strain. In the midst of the intense excitement which prevailed on board the steamer, it was rumored that it had given way, but it had only disappeared from our view for a few moments, and when we looked again, there it was, holding on with a death-like tenacity. In the midst of all the trouble it was encouraging to see this; we felt grateful that our labor had not been in vain, and re-assured as to the strength it was said to possess.

We now endeavored to get into a proper position to tow the bark, but after several ineffectual attempts, we were obliged to give it up in despair. Both the steamer and the bark were almost completely at the mercy of the elements; the hawser got under our wheels, and serious apprehensions were felt that it would interfere with their action. Fortunately, they escaped without damage; but we had hardly got clear of it when the ship was observed drifting down upon us with such rapidity as rendered a collision inevitable. From the moment her anchor was slipped she became unmanageable, and although every effort was made to get her bow in a straight line with our stern, it was found impossible to do so. There seemed to be some terrible fatality hanging over her, and as she came down stern foremost upon our bow, our worst fears were excited for the safety of both vessels. The propeller was lying off at a distance of two or three hundred yards, but she could render no assistance, and any attempt she might make would only render the matter more serious.

The scene on board our steamer was painfully exciting; every one crowded to the larboard side, awaiting the collision in breathless anxiety. The captain, as soon as he discovered the imminence of the danger, gave orders to reverse the wheels, and we were now moving out of the way of the ship, but so slowly that we appeared to make no progress. "Back her! back her!" he cried out to the first mate, who passed the order to the engineer. "Back her! why don't you back her?" roared the captain of the Sarah L. Bryant; but the ships appeared to be drawn together by some irresistible attraction, and in a few minutes after the order was given they struck. The larboard bow of our steamer came in contact with the stern of the bark; but not with such violence as we anticipated. None of our timbers were started, the only damage we received being two slight scratches about five feet above the water line, while the bark was uninjured. Our escape appeared almost miraculous, for at one time it seemed as if nothing could save us, but now that the fearful suspense was over the excitement died away. The ladies were not on deck when the accident occurred, as they had in compliance with the request of the captain retired to the cabin a short time before. They were ignorant of our danger, therefore, till it was all over.

We escaped, as we have said, almost by a miracle, a serious catastrophe; but we were not as yet clear of the bark, and more than once we were near coming in contact again. It was found necessary to cut the hawser on board our ship, and to let her take care of herself until we could get into a better position. As soon as we parted from her she dropped her remaining anchor, still holding on to the submarine cable, and we also came to anchor about the same time. We remained in this state for about an hour, when we saw two or three flags or streamers run up at half mast on board the bark—a signal of distress. Shortly after she unfurled some of her sails, and stood out to sea. She had lost her anchor, and to save herself from drifting on the rocks, was obliged to cut the submarine cable, and stand off from the shore. In a few minutes we were after her, and by a series of most skilful manœuvres attached her to our stern by a hawser. When we first approached, several efforts were made to throw a rope over her side, but without success, when our captain changed the position of our vessel so as to let her drop under our stern, and allow a rope to be flung to one of the men on her bowsprit. The rope was caught, the hawser hauled on board, and in less than a quarter of an hour we had her safely in tow.



THE JAMES ADGER AND SARAH L. BRYANT LEAVING CAPE BAY.

During this difficulty the bark lost two of her anchors, and the steamer was obliged to part with one of hers, leaving only two between both vessels. Both of these belonged to our steamer, but as it was impossible for her to return near the land without some security, our captain was obliged to give her one of his own.

The 26th being Sunday we did not move from the Cove, and a part of the day was spent in repairing the cable, which broke again soon after. It was evident now that the portion which had been laid must be abandoned, and that it should be relanded and secured anew to the fastenings in the telegraph house.

At an early hour on Monday morning the 27th, the Victoria took the bark in tow, and brought her within a distance of about six hundred yards from the beach. The cable was then placed upon the boats, as described in the preceding chapter, successfully landed, and placed in connection with the batteries. A stiff breeze from the north-west however prevented the prosecution of the work, and it was deemed advisable to defer it till the next morning. Outside the Cove the waves ran so high that any attempt to land the cable would have endangered the safety of both vessels. That day therefore we remained at anchor, and flattered ourselves with the hope that the weather would soon prove more auspicious.

The following morning was all that could be desired; the waves had subsided to a gentle ripple, there was scarcely a cloud to dim the brightness of the sun, Cape Ray appeared resplendent in his beams, and every thing seemed to favor the enterprise. As the first dawn of morning tinged the eastern horizon, the bark raised her anchor and was towed out to our steamer, which lay at a distance of half a mile from the beach. In less than an hour she was attached to the James Adger with a hawser, and the process of laying the cable was commenced in earnest. All our delay seemed trifling in view of our certainty of success—for no one entertained any doubts now of its success, so long as the weather proved favorable. The first two miles of the cable were laid without an accident, but just as they were commencing on the third a kink occurred, and it was found necessary to stop the steamer to repair the damage. In the course of an hour all was set right and we were under way again; but in a few minutes more the white flag which had been agreed upon as a signal before starting, was displayed, and we were obliged to stop. Mr. Canning afterwards said, that the speed of the steamer, even at its lowest rate, was too fast for the purpose, and that it was almost impossible for his men to pay out the cable with sufficient rapidity. Eight were employed in the hold turning out the coils, and eight more in attendance on the machinery. The position of those in the hold was one of considerable danger, and two or three were severely bruised by the cable as they were in the act of uncoiling it. It required their constant vigilance, and greatest activity to keep clear of it as it swept up through the hold, for if once caught within its folds, the consequence would have been serious, if not fatal. To avoid this, they stood on the outside of the coil, raising it up and passing it out at the rate of two, and sometimes, three miles an hour.

Several kinks occurred up to twelve o'clock on Tuesday night, and it was reported on board of our steamer at one time that the cable had parted. This report, however, was found to be incorrect, and it was ascertained that it only required splicing, and that it had to be cut to splice it successfully. This was a tedious task, and took till seven o'clock the following morning to accomplish. From this till four in the afternoon they had very few stoppages—the machinery worked admirably—and although our steamer was still somewhat too fast, the cable was paid out with less difficulty than had been experienced before. Up to this time they had to pay it out from the small coil in the bow of the vessel, but the work was not so arduous when they reached the larger one, which lay in the main hold. The kinks, therefore, became less frequent; and as we were now within sight of St. Paul's, which was about fourteen miles distant, we felt elated at the prospect of landing it there in a few hours more. We were, it is true, somewhat discouraged by a break taking place in two of the three copper wires, one only having remained perfect. Still, strong hopes were entertained that when once landed, all the wires would be in good working order. Forty miles of the cable had been paid out from the time we started, while the actual distance traversed did not exceed thirty-two at the utmost. It was, therefore, considered advisable to land it at the island of St. Paul's, instead of Cape North, as was at first proposed, and to make the connection next year. Not more than thirty-three miles of the cable remained, and it was on making the allowance for the loss of this, that Mr. Canning reluctantly concluded to give up the design originally entertained of running to Cape North.

At four o'clock the wind, which had been increasing for the last two or three hours, blew with such violence as to render it impossible to continue the work on board the bark. The sea ran so high that it was only at intervals we could discern those on her deck. The sky looked wild and threatening, and the waves broke in spray over the decks of both vessels. The ocean was covered with a mist that rendered objects, at the distance of four or five miles, invisible, and St. Paul's Island could no longer be seen. To render our position still more critical, another kink occurred in the cable, and both vessels were compelled to lay to. They made several attempts to repair the damage, but all was useless, the bark rolled with such violence that the men could not work, and it was with the greatest difficulty they could even stand on the deck. Every eye was now fixed on Mr. Canning, and they all waited with feverish anxiety for him to give the order to cut the cable. They had for more than an hour abandoned all hope of being able to land it, and their fears were aroused for their own safety and that of the vessel. But Mr. Canning was unwilling to give the word, still hoping, even against hope, that the gale would abate, and that before morning he would be able to resume work. Although both vessels were holding on by the cable, it showed no sign of parting, and would doubtless have remained whole to the end, had it been considered prudent to hold on by it. It was at this juncture that its strength was tested, and successfully proved. We had heard that it was capable of holding a seventy-four in a gale of wind, but it seemed hardly possible that even a rope of iron wire, not much more than an inch in diameter, could hold two vessels under such circumstances.

When Mr. Canning refused to cut the cable, and there appeared to be no prospect of the gale abating, the captain of the bark, Mr. Pousland, told him he would have to give the order, as the safety of his ship was now endangered.

"Mr. Canning," said he, "I shall be obliged to cut the cable."

"You can do as you please," said Mr. C. in reply, for he would persist no longer in his attempts to save it, as it had now become a matter of life and death. The next minute the cable was cut, the white flag which had been displayed on the bow for the last two hours was lowered, and we were once more in motion with the bark in tow.

On board our steamer the paying out of the cable was regarded with the greatest interest, from the moment we started from Cape Ray Cove. A watch of two hours was organized among the company, to be kept up till we reached the place of destination. Two persons were appointed on each watch, whose duty it was to attend to the signals on the bark, and to stop our steamer when required. During the daytime, the chief engineer, Mr. Scott, assisted in this part of the work, and the passengers will never forget the feelings with which they heard him call out to the man at the engine to "Stop her," or the relief they felt when he gave the word to "Hook her on, and let her go slow." We dreaded the appearance of the white flag, for it was an indication that something was wrong on board the bark, and when it was lowered it seemed as if an oppressive weight had been removed from our minds. But when the gale came on, and the lives of all on board the Sarah L. Bryant appeared to be in imminent danger, the interest became painfully intense. Although not more than five hundred feet from us, we could only see those on her deck at brief intervals. She plunged violently, and as she rose at times on the crest of the waves, we could see at least one half of her keel. For two long hours we watched her tugging at the cable, anticipating with impatience the word to cut it; but still she held on, and there seemed to be no intention on the part of those in command to give the order. At last the white flag disappeared, after an hour of painful suspense, and we soon perceived that the cable had been cut. The order was immediately given to our engineer to go ahead, but as there was some danger of the hawser breaking, our steamer was not put under full headway. At one time we were ourselves in a most critical condition, and were laboring heavily in the trough of the sea. It was only for a few minutes, however: our steamer was placed head to the waves, and we were soon out of danger. We now made as direct as possible for

Sydney, going at the rate of from two and a half to three miles an hour, and expecting to reach that port on Thursday.

The evening previous to the day on which the cable was cut the British war steamer Argus, Captain Purvis, which had been visible for the last two hours, came alongside the propeller, and was spoken by Captain Sluyter. Orders had been received by Admiral Fanshawe of the North American station, from the British Board of Admiralty, to render any assistance in his power to the vessels employed in laying the cable. The order was transmitted to Capt. Purvis, who immediately set out from Halifax, but unfortunately arrived too late for the purpose. He asked Capt. Sluyter if he required any assistance.

"Are you in want of assistance?" he inquired, when the propeller came within speaking distance.

"No," was the reply.

"Are you short of coal?"

"Yes, rather."

"Is the other steamer short of coal also?" he again asked

"Yes, we are both short."

"Then I shall lie by you all night, and if you should need assistance you shall have it."

True to his word, Captain Purvis remained by us, and as we saw the green and red lights of his steamer gleaming through the darkness of that long and weary night, we enjoyed a feeling of security for those on board the bark we had not felt for hours before.

About seven o'clock on Thursday morning, the Argus came alongside again, and we observed one of her men holding a black board on her paddle box, having the following inscribed in large letters upon it:

CAN WE RENDER YOU ANY ASSISTANCE?

Our captain shook his head in reply, but the Englishman was not satisfied with this, and taking a short turn, came back and again displayed his black board, with the following words:

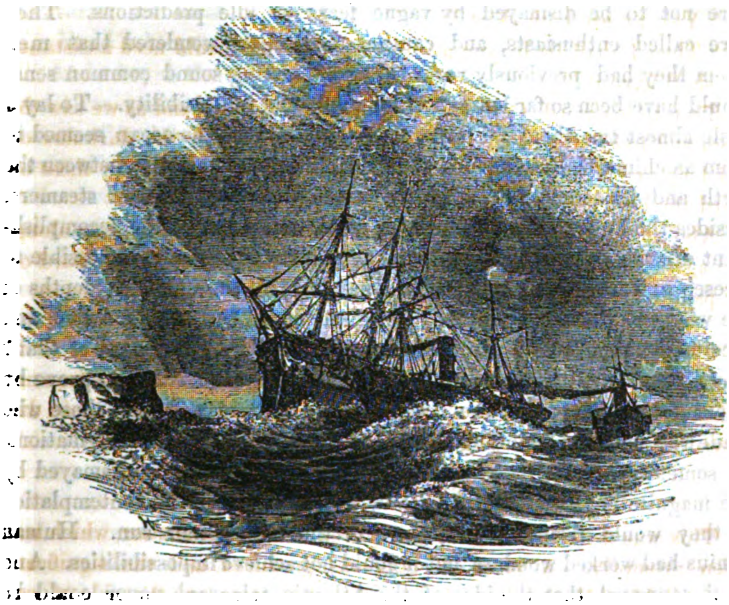
ANSWER—YES, OR NO! AS I AM ON MY PASSAGE.

This was definite enough and required an explicit answer, which was given promptly. A piece of chalk was produced, and the significant monosyllable "No" written in gigantic characters on the side of our smoke stack. This was sufficient, and in a few minutes more the Argus left us; but long after she disappeared beyond the horizon we could trace her course by the black line of smoke which she left along the sky.

On Thursday afternoon, about four o'clock, we took a pilot on board, and an hour after we were safely anchored opposite the coal wharf of

North Sydney. Our stay here was much longer than we anticipated, but we made the best use of our time, and before our departure had formed numerous acquaintances, and were tolerably well posted up in the character of the place and its people

The Sarah L. Bryant was left at Sydney, where the remaining thirty-three miles of the cable were taken ashore, and the propeller Victoria took her departure for St. Johns at an early hour on Sunday morning, September 2d. A few hours later we started for home, and after a favorable passage of three days, we arrived within sight of Long Island, about five o'clock on the morning of the 5th. Our pilot, Mr. Thomas Vail, who came with us from New York, now took charge of our steamer, which arrived safely at pier No. 4, North River, on Wednesday, September 5th. This ended the first attempt to lay the cable across the Gulf of St. Lawrence. The following year, however, a second attempt was made, and with complete success.



THE FIRST ATLANTIC TELEGRAPH EXPEDITION.

The United States Frigate Niagara, which had been detailed for the purpose of assisting in the work of submerging the Atlantic Submarine Cable, left New York on the 22d of April on her trial trip, and two days afterwards, set out for England. Never before had a vessel sailed on so grand an enterprise, an enterprise which taxed the faith of the most credulous, and afforded the scientific sceptic another field for the display of his argumentative powers. The impracticability of the work had been shown again and again, but the men by whom it was undertaken were not to be dismayed by vague fears or idle predictions. They were called enthusiasts, and cautious capitalists wondered that men whom they had previously regarded as possessing sound common sense should have been so far led astray by a splendid impossibility. To lay a cable almost two thousand miles across the bed of the ocean seemed to them as chimerical as the idea of establishing communication between the earth and its attendant planet by means of a line of aerial steamers. Besides the known difficulties which stood in the way of the accomplishment of such a work, who could tell what strange obstacles impossible to foresee and impossible to guard against, lay in the unknown depths of the wild and stormy Atlantic? True, the ocean had been sounded, and specimens taken from a depth of two miles exhibited, but what of that? Were there not men who contended, and who were ready to prove by scientific reasoning, that the ocean had no bottom, and that those who made the so-called soundings were the dupes of their own imaginations, or something worse? Then there were others who were dismayed by the magnitude of the enterprise, and who shrank from its contemplation as they would from the full glare of the midsummer sun. Human genius had worked wonders, but it could not achieve impossibilities. And so they argued, that the idea of the Atlantic telegraph never could be realized. But the announcement has been made to the believing and the unbelieving, that the Niagara has sailed from the port of New York to assist in the work of uniting two worlds by an electric chain, along which the thoughts of men will fly with the speed of the lightning itself. Our Government, to its credit be it said, had acted generously in the matter in selecting the largest and best appointed ship for the great experiment, and the English Government on its part displayed no less liberality. And now that the Niagara is fairly off, we will introduce the reader to her commander and officers :—

Captain, W. L. Hudson; Commander, A. M. Pennock; Lieutenants, Jas. H. North, J. D. Todd, John Guest, Clark H. Wells, W. D. Whiting, E. Y. Macaulay, Beverley Kennon; Surgeon, J. C. Palmer; Purser, Joseph C. Eldredge; Passed Assistant Surgeon, A. M. Lynah; Assistant Surgeon, T. W. M. Washington; Captain of Marines, J. C. Rich; Lieutenant of Marines, W. S. Boyd; Chief Engineer, W. E. Everett; First Assts., John Faron, T. A. Shock; Second do., M. Kellogg, John W. Moore; Third do., Alex. Grier, Thos. R. Ely, J. McElwell and H. Kutz; Boatswain, Robt. Dixon; Carpenter, H. P. Leslie; Gunner, John Webber; Sailmaker, Wm. B. Fugitt; Captain's Clerk, J. W. Hudson; Purser's Clerk, Edward Willard.

There were a few gentlemen who went out on the expedition as passengers on board the Niagara. These were: Professor Morse, Captain Schwartz, and Lieut. Kolobnin, of the Russian Navy, and the author. Mr. Field subsequently joined the vessel in England.

And now, as the Niagara is fairly entered upon the expedition, and may be said to have an individuality of her own, we will invite the attention of our readers to the character of the vessel herself and the little world which moves within her. They will thus be better enabled to understand more perfectly many of the details which are represented in the course of this narrative. Very little in fact is known about life on board a naval vessel, except what is obtained from novels, and that is so interwoven with romance, that it is not to be relied on. For those, therefore, who have obtained their information only from such sources, or who have no knowledge whatever on the subject, there may be some interest in the following sketch of the ship:

LIFE ON BOARD THE NIAGARA.

To begin, then, at the beginning, the spar deck is the first part of the ship that claims attention. It is the principal deck on the vessel, and is so named from the fact that all the masts and rigging are visible from it. The spar deck of the Niagara differs in many particulars from that of other vessels of war in the American navy, and presents perhaps a greater extent of clear and unobstructed space than is to be found in any other ship of war in the world. In nautical language it is what is called "a flush deck," which, reduced to plain English, means that it is as free from all obstructions as it is possible to make it on a vessel of such a character. This is a most essential object in the case of a ship like the Niagara, which differs in many points from war steamers. She is the largest steam frigate in the world, and exceeds in tonnage the heaviest of the line of battle ships in the British navy. While, however, she surpasses them in size, she numbers but twelve guns; but these are of such great calibre, and are capable of doing such terrible execution, as to place her, it is claimed, on a perfect equality with any of them, if they should not render her superior. Each of these guns weighs fourteen tons, including the carriage, and is capable of throwing a shell of one hundred and thirty pounds a distance of three miles. These terrible engines of destruction can be fired with as much accuracy as a rifle, and possess a great advantage over other kinds now in use, not merely on account of their great size, but from the fact that they can throw a shell to a distance which is beyond the range of those employed on the other vessels of our navy. The art of throwing projectiles has reached such a state of perfection that from the moment the shell leaves the gun the time which must elapse before it strikes the object is so nicely calculated that it explodes immediately on reaching its destination. Each of these guns is worked by twenty-five men, and from this number a "captain of the gun," a second captain, first and second loaders, first and second spongers, and others, are selected for special duty. The shell itself is loaded with six pounds of powder, and the quantity required for a charge is thirty pounds. The total weight of the twelve guns, with their carriages, is one hundred and sixty-eight tons; and if to this be added the shells and powder required for one hundred rounds to each, we will have an aggregate of about two hundred and seventy tons. To support such a weight of guns the spar deck, which on the Niagara is also the gun deck, is constructed of the strongest timber, and is strengthened by both wooden and iron stanchions. As these guns would only serve to encumber the vessel and interfere with the work for which she has been detached from the regular service, they were not taken on board. Their place, however, was supplied by four signal guns of less than one half their size, but which twenty or thirty years ago would have been regarded as gigantic specimens of their kind.

For the purpose of securing all the clear space possible on this deck, the poop and forecastle were greatly reduced in size, compared even with vessels of one-third the tonnage of the Niagara. In fact, on both there is hardly sufficient standing room for forty men. Some idea, however, of the great size of the vessel and the area of the spar deck, may be formed from the fact that in walking from the poop to the forecastle and from the forecastle to the poop eight times, you traverse a distance of about a mile. Of a summer's evening—such evenings as some of those we have had since our departure from New York, with a sea so calm that there was hardly a ripple on its surface, and the long swells were scarcely felt on our ship—a walk upon the deck is a luxury which Broadway, with all its varied beauties and attractions, could not surpass. Abaft the bridge or gangway, which divides the deck into two parts, is the officers' promenade or quarter-deck. As the executive authority reposes in the officer of the deck or the officer on watch, which is the same thing, and as the representative of the captain, he is supreme in his decision on all matters that do not require the arbitration of the commander himself; every outward mark of respect is to be paid to him by all who present themselves on this part of the quarter-deck. In compliance with this regulation every officer or man attached to the ship raises his cap when stepping on the quarter-deck, in deference not merely to the officer to whose charge the vessel has been consigned for the time being, but to the government of the United States, whose representative he is, and to the great people whose will has called that government into existence. This officer may be distinguished from the rest by his carrying in his hand a trumpet, by which he is enabled to give his orders to the men in the most distant parts of the ship. Forward of the bridge—that is, from the bridge to and including the forecastle—is that portion of the ship assigned particularly to the men, although of course they are restricted to no particular part in the performance of their duty; but this portion is free to those who are not on watch, and who are at liberty to pass their time in any way that may not conflict with the rules. Here, when the weather permits, they are to be seen employed as taste or inclination dictates; some engaged in reading, some in telling yarns, some in relating the adventures of their last cruise, some in making or mending their clothes, and others of a less sociable or industrious turn of mind dozing away their leisure time, like many of the same disposition on shore, who are too sluggish or indolent either to think or work. It must not be supposed, however, that their leisure cannot be broken in upon, or that they are entirely free from duty while off watch; for, properly speaking, a sailor is always at the command of his superior, and necessarily so, as his services may be required at any moment. When the order is given to have "all hands on deck," all who are on and off watch must be prepared to take in sail or perform any other duty that is required of them. This done, they are at liberty to enjoy the rest of their leisure time, subject, however, to be called upon again whenever their services may be required.

From the spar deck a part of the engine is visible, and looking down through the hatch you see the machinery by which this immense mass is propelled through the water at a speed of from ten to twelve miles an hour. This hatch is situated about midships, but on walking forward a few feet nearer to the forecastle you discover two other hatches, by means of which the fire room is supplied with pure air and light. This room is at least twenty-five feet below the spar deck, and a few feet still further down is the keel of the vessel. Rising above these hatches are the two smoke-pipes, both of which are capable of being lowered, by some telescopic contrivance, so as not to be higher than ten or twelve feet above the level of the deck. This arrangement is absolutely necessary, as they would otherwise be in the way of the mainsail; but all danger from fire is avoided by the consumption of the caloric, which in nearly all other steamers passes through the smoke-pipes. In fact, so little danger is to be apprehended from fire, that the temperature of the air at the top of these pipes never exceeds 130 degrees, and is generally much lower. Forward of the fire room hatches is the launch, a large open boat, about thirty feet long, and capable of holding one hundred and twenty men in case of shipwreck. Inside of this is another launch somewhat smaller, and inside of this again a cutter smaller still. They are all well secured to the deck by iron chains, but are so moored, or, to use a less nautical term, so firmly secured that in an emergency they can be detached in less than five minutes, and made ready in a very few minutes more for the important work for which they are mainly designed. The launch is also employed to water the ship—that is, to supply her with fresh water, and if necessary with provisions. There are besides these three boats another, called the dinkey, which is also placed in the launch, and six cutters which are secured to the davits on each side of the vessel. In all, there is room for between four and five hundred men. These, ample as they may appear, are not the only means for saving life, as in many cases they would of themselves be entirely useless for the purpose without some auxiliary. In the event of a man falling overboard, for instance, even five minutes would be too long, and the best swimmer might not be able to keep himself above water till a boat could reach him. To meet such an emergency, there are two life buoys attached to the stern, and connected by means of wires to two handles, which are within the reach of either of the two men stationed at this part of the vessel. By pulling this handle the buoy is immediately detached, and falling into the sea is, in nine cases out of ten, effective in the saving of life. The instant the cry of "a man overboard" is heard by the watch upon this station, his hand is on the handle, the buoy falls from its place, and it not unfrequently happens that it is seized before it is a minute afloat. All this is accomplished in less time than is taken in the description. During this operation, the ship is arrested in her course, the gang of men who are stationed at the life-boat are engaged in unmooring and launching it, and in about ten minutes from the moment the man has fallen overboard he is rescued and restored to his shipmates. As the life buoy would not be visible at night, it is lighted by means of a trigger, which ignites a sort of roman candle or blue light, that continues burning ten or fifteen minutes. To prevent the possibility of mistake, the following words are inscribed above both handles—"LIFE BUOY—PORT FIRE."

At night, the handle under the words "port fire" is the first that is pulled, and immediately after the life buoy with the light thus produced, must be set afloat. This admirable invention has been the means of saving many lives, and all vessels, whether belonging to our commercial marine or navy, ought to be provided with one at least.

Descending from the spar deck to the depth of ten or twelve feet, you reach the main or berth deck, which may not improperly be termed the domestic department of the ship. The captain's cabin, the officers' wardroom, the petty officers' mess, the cook's galleys, and in fact every thing that is required in the household arrangements of so large a number of men, are all on this deck. Here, too, they eat and sleep, while nearly all the work of the vessel is done on the spar deck. The captain's cabin is situated, of course, nearest to the stern, and is fitted up and furnished with a degree of neatness and taste that you might look for in vain in some of the best hotels in New York. Here is the ship's library, and here, too, all the orders are issued to, and reports received from, the various officers in command. Every day the doctor sends in his account of the number of sick in the hospital, and every day the sailing master submits the result of his observations and calculations in regard to the sailing and position of the ship, while the first lieutenant, who is his chief executive officer, reports to him every thing of importance that comes under his charge. Matters which a landsman might regard as trifling are sometimes made the subject of a detailed report, and entered upon the ship's journal with the same care that would be given to the entry of a debt in a ledger. If a piece of timber is observed floating past the vessel, official information of the fact is conveyed to the captain by the orderly, who keeps guard near the cabin, or one of the crew despatched by an officer for that purpose. Unimportant, however, as such things may appear to those who have but a limited knowledge of life at sea, they are sometimes of the utmost consequence. Beside the scientific works required for the use of the ship, there is a library for the sailors, containing principally books of a moral and religious tendency, with some histories, lives of celebrated men, adventures by sea and land, and a few works of fiction. These afford excellent and instructive reading to such of the crew as are disposed to spend their leisure time in that way, and are certainly a great improvement upon the yellow covered literature and other trash that too often find their way on board both men of war and merchant vessels. This library is also in the cabin, and is fitted up with that regularity and regard to order which should characterize all the departments of a ship-of-war. As a general thing, the opportunity which it affords to sailors for mental improvement is very seldom taken advantage of, while the Life of Jack Sheppard, Dick Turpin, and the biographies of celebrated pirates and buccaneers, are read with the most intense interest. Occasionally, it is true, there are to be found fine, sterling, good-hearted, simple-minded, honest fellows, whom all the vicious associations and evil influences to which they have been exposed are unable to corrupt or deprave, and to such libraries of this kind are among the favors that they prize most. Every way it is regarded, the ship's library is an institution that should be sustained, as one of the means by which the moral and mental standard of our seamen is to be improved and elevated.

The wardroom of the officers is the most spacious apartment, not only in the Niagara, but is said to be the largest and most commodious in the American or any other navy. It is about fifty feet by thirty, and between nine and ten feet from the floor to the ceiling. The furniture is of a simple and unpretending character, but there is an appearance of elegance about the style of the apartment itself which more than makes up for the absence of mahogany, or more costly rosewood. An engraved portrait of Washington, in a plain gilt frame, hangs in the most conspicuous place in the apartment, and this is the only work of art by which it is embellished. But the visitor must not take this as an indication of a want of appreciation of the fine arts in the officers, for nothing would be more incorrect or more unjust. Enter almost any of the fifteen snug and neatly furnished little eight-by-ten bedrooms, and you will see more than one painting, and among these perhaps copies of some gems of the old Italian masters and articles of *vertu* obtained during a cruise in the Mediterranean. And there, prized still more, hanging beside these, is some present from dear friends at home, whom absence and distance have only served to render dearer than ever. Wherever you turn your eyes you see evidences of woman's taste and ingenuity; it may be in a beautifully wrought watch-pocket, or pincushion, or other trifle, all giving an air of taste, if not of luxury, to the little bedroom. The government in its bounty has furnished it with a tolerably good bureau, a washstand, a chair and a bedstead, or rather some contrivance to place a bed on, but here its liberality has stopped; and the officers have to supply the hundred other necessaries that make up the sum total of a well regulated, well provided household. They have to purchase bed clothing, looking-glasses, towels, pitchers, basins, soap, knives and forks, spoons, cooking utensils, plates, tables, table covers, coffee and tea pots, plates and dishes, cups and saucers, bowls and all the other articles which are considered indispensable in the proper management of domestic matters. The experience which they obtain in this way gives them a decided advantage over landsmen, and makes them, as may be supposed, somewhat of a domestic turn. In fact, the close and intimate connection into which they are brought with each other binds them together like members of one family, and the friendship which is formed in the wardroom and at the mess table often lasts through life, and with a firmness and sincerity sometimes exceeding that which exists in the family relations.

The mess fund is formed by equal contributions levied on each member of the wardroom, and with this is purchased the provision necessary for the cruise. The caterer of the mess is selected from among the officers, and to his charge is consigned the direction and management of all those things which fall to the care of caterers generally. This office is purely an honorary one, but, unlike most offices of an honorary kind, there is considerable responsibility attached to it. He looks after all the table appointments, and requires of the steward an account of the breakages, takes notes of the consumption of provisions, and at the end of the cruise renders an account of his charge.

The wardroom is exclusively the officers' apartment, and not even the captain is privileged to enter it, except for the purpose of official inspection, when it is of course thrown open to him. While, however, it is their own, indeed as much as any gentleman's house is his, and no one can force himself uninvited into the mess, it would be wrong to suppose that there are, therefore, no interchange of courtesies, or that it is enclosed by a sort of Chinese wall for the exclusion of all but those who are members of the mess. So far from this being the case, it is a common thing, I understand, in our navy, for the officers to invite the captain to partake of their hospitality, and some of the pleasantest hours which are spent on board a man-of-war, are those passed by the officers and the captain in the interchange of mutual courtesies and friendly feeling. During the passage of the Niagara I had the pleasure of being present at one of these re-unions, the company consisting of all the wardroom officers, the captain, Professor Morse, and the two Russian officers, Captain Schwarz and Lieutenant Kolobnen, and I had a full opportunity of realizing the fact that the amenities of social life are as well understood and as much appreciated at sea as on land.

According to the rules of the ship all the lights in the berth-room are extinguished at ten o'clock, but permission can be obtained from the officer of the deck to keep them lighted for one or two hours after that time if necessary.

After ten o'clock, also, all conversation or noise that may disturb the sleep of the officers who have kept watch or are going on watch is strictly prohibited, and only one light is allowed in the wardroom. Whatever may be said about late hours and dissipation ashore, there can be very little if any at sea, and however men may be inclined to indulge while on land, they have certainly no opportunity for it on board a ship of war.

The messrooms of the warrant officers are not equal in appearance to that which has just been described; but their rooms are hardly inferior in point of accommodations and general appearance to those of the wardroom officers. In this particular the Niagara differs from nearly every other ship in our naval service, and for this point of difference the warrant officers are indebted, to a considerable extent, to Mr. George Steers, who was determined that his fellow-mechanics should have no reason to complain of limited or inferior accommodation. The warrant officers are so called on account of their being appointed by a warrant signed by the President, and differ from the lieutenants in their not being confirmed by the Senate. They are also inferior in rank, and are out of the line of promotion. Their mess consists of the carpenter, the sailmaker, the boatswain, the gunner and assistant engineers, the chief engineer being one of the wardroom officers.

Forward of the mess and berth rooms is the part appropriated especially to the sailors and marines, and it extends on either side of the masts and hatchways, which occupy nearly the whole of the central space, about two hundred feet each side, by from fifteen to twenty in width. It is in this portion of the berth deck that the marines and sailors sleep, eat, and transact nearly all their little domestic affairs. At twelve o'clock some two hundred men here sit down to dinner, all divided into separate messes of fifteen men, each of which has its own cook, who is generally selected on account of his qualifications in the culinary department. Let a man obtain a character among his messmates for superior attainments in cooking, and he is at once elevated to the position. He must understand thoroughly the making of dunderfunk, be *au fait* in the cooking of lobscouse—two very favorite dishes among sailors—and if his abilities are of so high an order as to comprehend the baking of puddings or pies, so much the better for his own standing and the palates of his messmates. Lobscouse, which, as has been stated, is a dish in great favor among sailors, is a kind of stew, and is usually composed of salt beef, potatoes, onions, a liberal sprinkling of pepper, and the due allowance of water. It was supposed by the ignorant, and those who had an undue appreciation of Jack's digestive powers, that its flavor was strengthened by the addition of pieces of sole leather, some old buttons, and occasionally a piece of tarpaulin or hemp cuttings; but it is all a mistake, for although Jack, in the vicissitudes to which all who follow a seafaring life are subject, is sometimes compelled to put up with the hardest fare, and sometimes obliged to do without any at all, he has no particular relish for a compound that would try even the stomach of an ostrich. Dunderfunk is made of hard bread, beef, or pork and beans, a little molasses and a small quantity of vinegar; and, notwithstanding its startling title, is, after all, as simple and as easily made as fish, or any other kind of chowder. The fare which is given to the seamen in our naval service, although not of the best description, is far superior to that which the laborers in our cities and on our farms receive. Every mess has a liberal supply of beef, pork, potatoes, onions, flour, coffee, sugar, tea, and all the little etceteras which are so essential to the complete success of all cooking operations. These are served out every second or third day by the Purser's steward, who keeps an exact account of the amount distributed among the different messes. As our Government is very liberal in regard to rations, each man receives more than he can dispose of, unless endowed with unusual gastronomic powers, and as a general thing the amount supplied to every twelve men is abundantly sufficient for a whole mess of fifteen. On the principle, it is to be supposed, that "enough is as good as a feast," they draw rations for twelve, and in exchange for the surplus receive its full value in money, with which they are enabled to supply their table with many delicacies which are not to be found on the provision list. It is not uncommon, therefore, to find a mess occasionally sitting down to as good a dinner as the officers themselves; and plain puddings, apple pies and roast beef, have long ceased to be unknown luxuries to the common sailor. Their household appointments are not, it must be acknowledged, of the best description, and in lieu of tables and chairs they are obliged to eat off, and sit down on, the deck. A piece of tarpaulin serves all the purposes of a table-cloth, and although some fastidious tastes might object to the peculiar odor which it gives the smoking viands, yet it is a healthy odor, to which only landsmen would think of objecting. Upon this the dinner is spread, each man supplying himself from the large dish in the centre, which contains pork, or beef, or lobscouse, or dunderfunk, or whatever other fare they may have. At eight o'clock in the evening the hammocks are slung up, each man having a certain space allowed him to swing from during his four hours off watch; but he is liable at any moment to be roused from his slumbers by the cry of "all hands on deck," and is sometimes obliged to postpone his sleep till the next night if the weather should prove stormy. In such cases, however, he generally manages to make up for lost time by snatching a moment of rest on the deck, or wherever and whenever he can during any intervals that he may have. With all his troubles and labors, Jack is, perhaps, one of the most cheerful of men, and if he is sometimes too ardent a votary of the jolly god, he is not a stranger to the finer sentiments and feelings. He has a strong love for music, and indulges it whenever he has an opportunity. There is not, perhaps, a vessel in the American navy whose crew numbers over thirty or forty men that has not a musician of some kind among them, and they are generally held in the highest estimation.

As for the Niagara, she has quite a large force of them, independent of the two official musicians, if they may be so called, that the government of the United States has provided. These are entered upon the ship's list as musicians, but lest there should be any misapprehension in regard to their particular grade, or the instruments on which they perform, it may as well be stated that the musicians in this instance are simply a fifer and drummer. It will, however, satisfy all true and patriotic Americans to know that their abilities are fully equal to the performance of "Hail Columbia," and "Yankee Doodle," and the American who after that would stop to inquire into their knowledge of the works of the great composers has not a spark of feeling in his whole composition. These are the official musicians, but there are, as I have said, a number of others on board, amateurs, who play for the love of it, and without hope or prospect of pay. It was my good fortune to be a witness of a concert which took place here a few evenings ago, and although not one of the assembly I had still a fair chance of seeing and hearing all that was going on. The concert came off on the berth deck, within a few feet of the cook's galley; the performers were two rival violinists, who have been contending for the palm ever since they came on board, and the audience consisted of some three or four of the cooks, two or three powder monkeys, and some twenty or thirty sailors. The performers sat opposite each other, and suspended between them was a large ship's lamp, which threw a dim and clouded light on the admiring faces around. One of the fiddlers entertained his audience with the wonderful performances of the "Bob-tailed Nag," while the other played "Villikins and his Dinah," with an expression that even Jem Baggs himself could not surpass. The contest was maintained with about equal success on both sides, and when the change of watch called the rivals away to the spar deck and broke up the assembly, it was impossible to decide which had the advantage. The affair furnished a topic for conversation many days after, and I believe the remembrance of it will remain with the hearers long after the cable is laid.

This sketch of the main deck and social life among the sailors would be incomplete if I failed to mention one of the most important institutions in the vessel—the ship's dispensary. The dispensary is situated at one end of the warrant officers' mess and berth rooms, on the starboard side, and is supplied with all the medicines necessary for the treatment of every disease. It is under the charge of the surgeon's steward, who makes up all the prescriptions, and who is to all intents and purposes the same as an apothecary. There have been very few cases of sickness among the crew of any consequence, but were it not for the course which has been pursued by the ship's physicians they would have more patients on the list than they could well attend to. On board of almost every man-of-war there are a number of good-for-nothing idle fellows who endeavor on every occasion to shirk their work by feigning sickness. Sometimes they succeed, but the detection of one or two generally leads to the discovery of the rest, when their names are at once taken off the sick list, and they are obliged to perform their duty.

The orlop deck is almost exclusively used for the storage of provisions, water, the ship's ammunition, extra hawser, ropes, sails, and all the other articles that constitute a ship's stores. The part appropriated to the provisions is protected from the invasion of rats or mice by a casing of tin, and the magazines, besides being carefully locked and sealed, have a sentry always on guard near them. At the extreme forward end of the orlop deck is the hospital, which has accommodations for fifteen or twenty patients, but fortunately there are not more than two or three in it at present, and those are not seriously sick. The engine and fire rooms are situated about the centre of the vessel, and extend from the bottom of the ship to the spar deck. In comparison with her immense size, they take up very little space. The firemen, whose watches, like the sailors, are divided into four hours each, sleep on the orlop deck, have separate messes, and are never, except in cases of emergency, required to do any work upon deck.

According to naval discipline, every man on board a ship of war is supposed to be always ready for duty, unless prevented by sickness; but, as sailors require rest, as well as other men, their hours of labor are so divided, that while one-half of the crew are on watch or duty, the other half are at leisure. There are two watches, which are known by the names of port and starboard, each of which are four hours long. As this system, however, if followed out, would only give one-half the crew four hours' sleep every night, another watch, called the dog-watch, which is intended to obviate this difficulty, was established. This is a watch of two hours, and extends from four to six and from six to eight in the evening, and by this means each of the two watches of the ship are enabled every second night to get eight hours' sleeep. Thus the watch which is relieved from duty at eight o'clock in the evening, can sleep till twelve, and being again relieved at four, may at that hour take possession of their hammocks and sleep till eight in the morning. These watches are stationed in different parts of the ship, both day and night, some in the foretop, an elevated position on the foremast about a hundred feet from the deck, and some in the main and mizzen tops, while others are placed on the forecastle or poop, by the ship's boats, a: the helm, and other stations, where they are always ready when their services are required. One of the men on the foretop keeps a look-out for all vessels, and on account of his position is able to see them half an honr or more before they are visible from the deck. The moment he descries a sail, though it looks like a mere speck on the horizon, he announces it to the officer of the deck. "Sail ho!" he cries aloud, from his station, when the officer, if he desires to know the direction in which he has seen it, asks, "Where away?" and is told in reply that it is on the weather quarter or lee bow, as the case may be. But in mid-ocean the announcement that a vessel is in sight is received with the greatest interest. Every one is anxiously looking out for her, and all the telescopes and opera glasses on board are in immediate demand.

The men stationed at the poop are required to be particularly vigilant, so that if a man should fall overboard, they may be ready at a moment's warning to detach the life-buoy. There are several other watches for the reefing, furling, and setting sails, and for various other duties, the details of which possess little interest for the general reader.

The force of marines on the Niagara does not exceed sixty men, but they are among the most effective and the best drilled in the service. They are the sentry of the ship, and are always placed on guard over the grog, the ship's stores, the provisions, and on the different decks. The marine, besides being the sentry of the ship, is also a soldier, and his drilling and training differ in no material respects from the drilling and training of the soldier in our military service.

Every ship of war in our navy is provided with sailors' clothing of all kinds, sufficient to supply their demands during the cruise, and longer if necessary. These are given to the men at cost price, and the total amount deducted from their wages. In this respect the seamen on board a man-of-war have a great advantage over those who ship on a mere merchant vessel, and who are obliged to purchase their outfit at exorbitant rates in retail establishments. In addition to this the clothing furnished by the government is of a superior quality, and Jack has the satisfaction of knowing that he gets the full value of his money. If he is of a saving, economical nature, this is a great consideration to him; and as his means are limited, and he is not very judicious in the expenditure of them, it is the best thing the government can do, as long as it deals only with honest contractors, and not with men who never scruple to make money even by frauds upon those who labor hard for a living.

The clothes are served out by the purser on a specified day, when all who have applied for various articles of dress must be in attendance. This officer has their names written on a schedule opposite the different pieces of clothing of which they are in want, and as he calls them out in their turn, they step forward and receive them from one of the purser's assistants. One pile of clothing consists entirely of pants, another of drawers, another of caps, another of socks and stockings, another of pea-jackets, another of flannel overshirts, another of boots and shoes, and so on to the end of the list. As they are not very particular about the exact size of the pants or pea-jackets, it is easy to suit them, but the chief trouble is in the fitting on of the shoes. He has, however, an immense number of all sizes to select from, and he generally finds his measure some time between five minutes and half an hour. The flannel and cloth he converts into a shirt or trousers, as taste or necessity may dictate, and when he wants to lay in a good supply he obtains from ten to twenty yards of it for the purpose. Some are not so expert at the needle as others, and those will pay three or four yards of their flannel for the making of a pair of pants or a shirt, and more in proportion for a pea-jacket or other article of dress that requires a larger expenditure of time and labor in its manufacture. The tailoring is carried on principally on the forward parts of the spar deck, in favorable weather, when as many as twenty or thirty may be seen sitting under the bulwarks and working away as if they had served a regular apprenticeship to the trade. There, in the midst of that group of lookers-on, is an experienced hand at the work, chalking out the various parts for the sleeves, the collars and the body, before cutting it out; while here, in the centre of another little knot of spectators, is an amateur in the same business, employed in embroidering a star of various colors, for the top of a cap, or the collar of a flannel shirt. They are not only supplied with cloth and clothing, but with thread, needles, thimbles, bodkins and every thing necessary to carry on the tailoring successfully. And this is not all. The ingenious sailor is not only able to make his own clothes, but he can turn out of his hands as good hats as he can purchase in the store. They are made of straw, or some similar material, which he first plaits and afterwards stitches together without even a fitting block, and yet with as much neatness and success as if he had all the appliances of a manufactory at his control. From all this it will be seen that however different they may appear, it is not impossible to combine the two occupations of sailor and tailor in the one person, and that the same man who is accustomed to handle a marlinspike can use a needle with as much skill and dexterity.

That particular hour of the whole twenty-four which possesses the most interest for sailors, and which is always looked forward to with pleasure, is that appointed for serving out the grog. No matter how dilatory they may be on all other occasions, they are always on the alert when Uncle Sam, as they say, is going to "stand treat." All hands are on deck then, and collected in an eager, expectant throng before the grog tub, ready to "stand by" when their names are called. The vessel used for serving out the liquor is a small tin cup called a "tot," which contains somewhat more than a glass full, which is emptied by each man with a rapidity that would astonish any one ignorant of the ease with which Jack disposes of such welcome favors. Occasionally some men are to be found among a ship's crew who are strictly temperate, and to these the government always makes an allowance in money when paying their bills, equal to the value of their grog rations. In the course of a year this amounts to nine or ten dollars to each man, sufficient to keep him in shoes for nearly the whole of that time. By saving in this and other rations he is enabled to add, if he is so disposed, at least twenty dollars to his twelve months' pay, which at the rate of eighteen dollars a month for a good seaman, is over two hundred dollars. The green hands, who come under the title of landsmen, and of whom there are a large number on board the Niagara, are not so well paid. Whatever saving or economy they may exhibit in the consumption of their mess rations is very rarely extended to their grog, and one of the severest penalties you can inflict upon them is to deprive them of their daily allowance. When other punishments for minor offences have failed, "cutting off the grog" has almost invariably succeeded in bringing the culprit to his senses. Notwithstanding all the efforts of the temperance advocates for the abolition of this particular institution on shipboard, it seems destined to a long life; and it is much to be feared that although Jack is the party whom their efforts are intended to benefit, he is so far unable to appreciate their kindness that he would prove one of their most strenuous opponents.

ARRIVAL OF THE NIAGARA IN ENGLAND.

The Niagara arrived in the Thames on the 14th of May, and came to anchor off Gravesend, a small port about twenty-five miles from London. She remained here till the 5th of June, when she left for Portsmouth, to undergo the alterations necessary to fit her for the reception and laying of the cable. While lying in the Thames she was an object of much interest, and was visited daily by a large concourse of people.

The inhabitants of Gravesend flocked in crowds to see the ship, and when it was reported that we would not remain more than a week, received the announcement as they would the departure of old and cherished friends. The first and second day after we had anchored opposite their picturesque little city, only a few of them came to see us. There would, however, have been a large number, had it not been generally believed that they would not be allowed on board; but as soon as they learned that they were not only allowed on board but that they were not restricted to any part of the ship, we were almost overwhelmed with visitors. The weather was favorable, and they took advantage of it, determined that it should not be their fault if they did not see us and ascertain for themselves what kind of people the Yankees are. The river in the immediate vicinity of our ship swarmed with small craft of every description, and from early morning till eight in the evening a steady, constant stream of men, women, and children poured in and out over her sides. They flocked in throngs into the officers' wardroom, the captain's cabin, the engine-room, and all parts of the vessel, and appeared as if they would never weary in looking at every thing they saw. It was the first American man-of-war, they said, that had ever anchored in the Thames, and as they had never seen one before, their curiosity was excited to the highest pitch. They wanted to know if all our vessels were of the same size, and were astonished that we should allow persons to visit every part of her. The boatmen, who hailed her appearance with general joy on account of the impulse she gave to their business, were unbounded in their praises of her immense size, and the symmetry of her model. One of these, a tough, weather-beaten old fellow who had, he told us, been in many a hard blow off the English coast, had quite an interesting conversation with one of a party belonging to the Niagara, whom he was taking out to the vessel.

"What kind of a ship is that?" said the gentleman, professing to be ignorant of her character.

"That? Vy that's a Hamerican ship," he replied.

"Well," said his questioner, "are the people civil aboard of her? Will they let you see her?"

"Yes," he said, "they're wery good—wery civil; their civility is n'countable—they're so civil."

"Well, I see," the other rejoined, "I see she's a very large ship for a frigate."

"Aye, you may say that. Ecod, I believe you sir. If they calls such a ship as that a frigate, I dunna what their liners be. Ha! ha!"

The women are in raptures with both officers and men, and sometimes give pretty free expression to their feelings.

"I really thought," one of them said the other day to an officer who was showing her the vessel and explaining all the parts of it to her, "I really thought that they didn't allow people to look about the ship. But we find the officers and the men so very civil and so willing to oblige us that we were quite taken by surprise. Indeed," she continued, "I like the officers so much that if I had a chance I think I'd run away with one." Here was a female kidnapper with a vengeance; but she did not show any desire to carry out her design then and there.

Among the celebrities who visited the ship was Lady Franklin, who was, of course, a great object of interest on account of the position in which her melancholy loss, her self-devotion, enduring hope and noble fortitude have placed her before every lover of true womanhood in both the Old World and the New. She is now about sixty-five years old, and in stature is rather below the medium height. Her face is peculiarly expressive, and every feature of it is indicative of that remarkable tenacity of purpose and undying hope which have buoyed her up in the midst of her affliction and which at this time still characterize her. It is said that she has at last abandoned all hope of ever seeing her husband alive, but believes that his body and the records of his cruise will yet be found. A proper feeling of delicacy forbade all allusion to the subject among the company; but those who were present could not avoid seeing the emotion which she endeavored to subdue. She had visited the Resolute when in London, and her presence again among Americans awoke recollections of a pleasing but still of a painful character, recalling to her mind the efforts which our countrymen have made for the discovery of the lost navigator and the early death of one of those who was foremost in the ranks of Arctic explorers.

Before leaving for Portsmouth the Agamemnon, which was appointed by the British Government to take one-half the cable at Greenwich, arrived in the Thames. As she passed us on her way up the river, three thundering cheers burst from her decks and shrouds, that roused the slumbering echoes on either shore, and before they died away they were answered by our men with one long sustained hurrah, that seemed to pierce the very clouds. The three that greeted and came thundering to us from the British ship were as distinct and as nicely graduated as if they were timed and marked by the roll of a drum; but ours appeared to be under no restraint, and blended and mingled in one long wild hurra like the sound of a whirlwind. After one more cheer—a parting one before the British vessel passed beyond hailing distance—the riggings were cleared, and we watched her as she ploughed her way up the Thames, part of her hull looming above the banks, even as she turned the bend in the river.

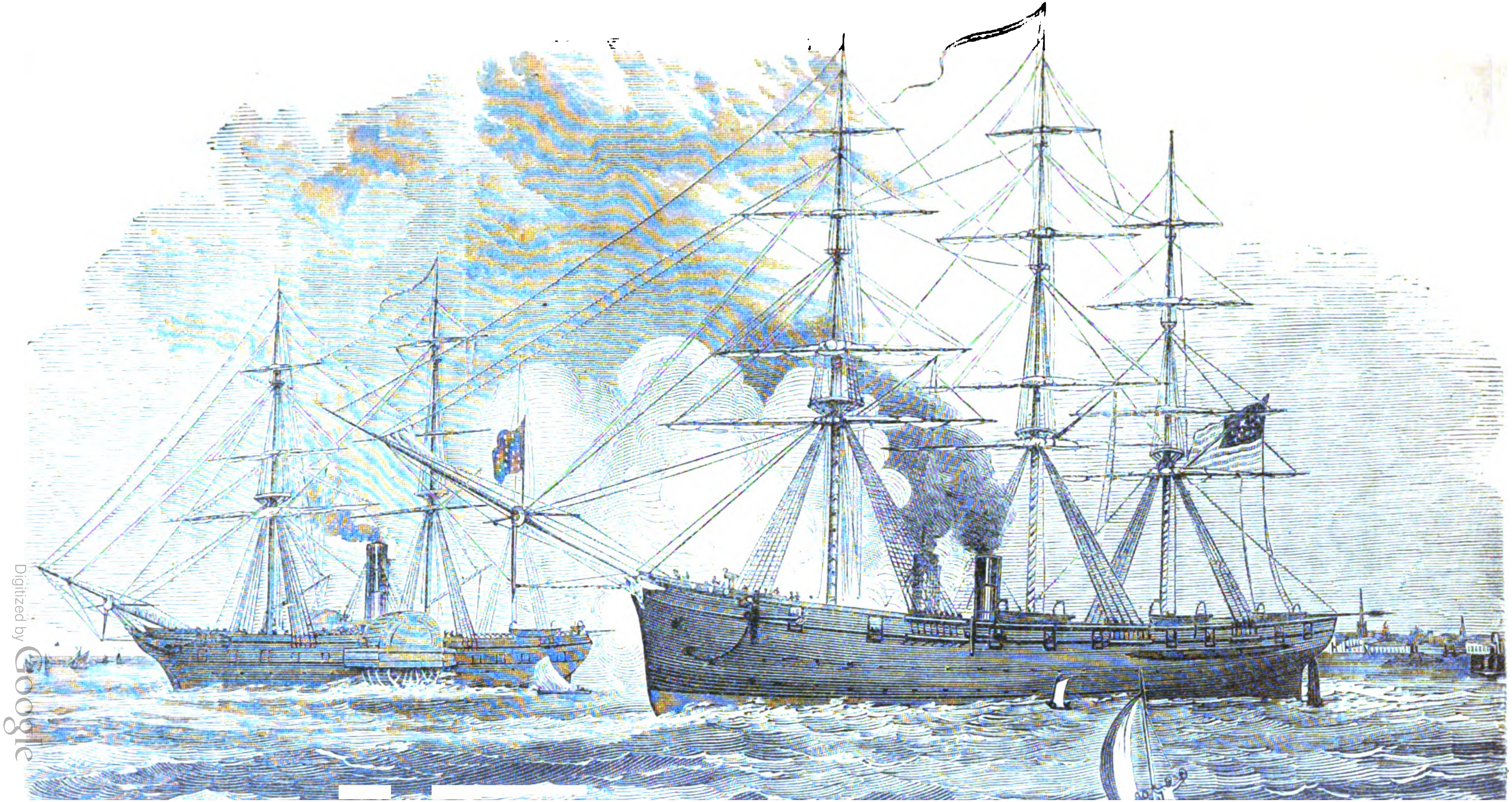
It was supposed that the Niagara would take her half the cable from the manufactory at Greenwich, and that the Agamemnon would ship the other half from the manufactory at Birkenhead, opposite Liverpool, but this order was reversed on account of the great size of our ship and the difficulty of procuring sufficient room for her near the wharf in front of the cable works.

The arrival of the Susquehanna in the Thames was daily expected, as she had some time before received orders to join the Niagara and to act as her escort during the expedition. It was known through private letters that she had left Spezzia on the 18th of May, and she was therefore looked for several days previous to her arrival. On her way, however, she stopped five days at Lisbon, from which she made the passage to Cowes in four more. While lying in this part of the British Channel she was passed by the Osborne, the British Admiralty yacht, on board of which was the Grand Duke Constantine of Russia, who was on a brief private visit to the Queen, and the details of whose reception were given at length in the English papers. There was considerable consumption of gunpowder on the occasion, but not quite such an expenditure of the article as took place during the eleven long and weary months that the allies lay before Sebastopol. But a comparatively brief period has elapsed since the celebrated siege of that city, and now we see the two royal families who at that time were at deadly feud with each other, meeting on terms of apparently the most friendly social intercourse. It appears that the Grand Duke was somewhat jocular on the occasion of his introduction to Mr. Bower, who at the time of the siege was sailing master on board the Agamemnon, one of the vessels of the immense fleet with which the English assailed the great Russian naval dépôt of the Black Sea. It is said that he asked Mr. Bower if he did not find himself in a "very hot berth," but the future historian is left in complete ignorance of Mr. B.'s answer, for the journalist, while he has recorded the pleasantry of the Grand Duke, has said nothing about the reply of the sailing master. There was, as has been already stated, a considerable consumption of gunpowder at the reception of the distinguished visitor, and it may not be unworthy of notice that the Susquehanna was the first to salute him. Her yards were manned, and twenty-one guns fired, a compliment which, it is said, the Grand Duke expressed his high appreciation of as tendered by a nation with which Russia had always been on the most friendly terms.

The Susquehanna arrived in the Thames about 7 o'clock on Sunday morning, the 31st of May, and a few hours after was seen from our deck. As she neared our ship our signals were run up, and after she had passed and anchored within a few hundred yards of us, one of our officers was sent on board of her. Captain Hudson subsequently visited Captain Sands, her commander, according to the rules of our naval service, which require the junior captain to pay this mark of respect to the senior on all such occasions. This was the only demonstration which was made—there was no cheering, nor any of those manifestations of feeling which were displayed on both sides the Sunday before, when the Agamemnon passed us on her way up the river. It is only, it appears, when our ships are parting company that they cheer each other. But if our men were not permitted to indulge in those friendly demonstrations, the gratification which they felt at seeing another of our national vessels in a foreign port, with the flag of the republic flying from her peak, was none the less sincere and heartfelt. This was the first time that two American war vessels had been seen in the Thames, and it is gratifying to be able to state that they were the largest vessels of their class in the world, the Niagara being the largest propeller, and the Susquehanna the largest side wheel steamer. The officers of both vessels soon made or renewed acquaintance with each other, for some were formerly old companions in the service, and their meeting, as may be supposed, was of the most pleasant character.

PREPARATION OF THE NIAGARA AT PLYMOUTH.

The Niagara left the Thames for Portsmouth on the 5th of June, where she arrived the following day. She was detained here two weeks, while the necessary alterations were being made for the coiling of the cable at Birkenhead. Those who were on the ship before she left New York the previous April, would have been astonished at some of the changes she underwent during her stay at this port. The officers' wardroom was broken into, three of their state-rooms on each side of it taken down, and the partition which divided it from the rest of the main or berth deck completely removed. The open space which extended outside of this apartment, away beyond the steerage, is called "the country" among the sailors, but the barrier once removed, the officers' wardroom might now properly be said to form a part of the rural districts, and the whole mess enjoyed all the



pleasures of rustication for several months. They sacrificed whatever conveniences they had to the success of the enterprise, cheerfully abandoned their berths for a hammock, and turned out of their state-rooms, that there might be sufficient space for the coiling of the cable, which was spread over a large tract of "the country." The moment the carpenters and other workmen made their appearance, there was a general moving among those whose quarters were invaded, which, on a small scale, might not inaptly be compared to the first of May in New York. Looking-glasses were intrusted to the hands of careful waiters, and stowed away in places of safety; little libraries taken down from their shelves above the berths, and packed in trunks for the time being; then followed the wardrobe in all its variety—the naval uniform and the dress of the civilian, the cocked hats of the officers in three-cornered japanned boxes, all by themselves, and the beavers of the citizens, with and without boxes; the three or four dozen shirts and the five or six dozen collars, carried as carefully on the outstretched arms of the waiters as if they were so many new-born babies; India-rubber overcoats, India-rubber overalls, and India-rubber boots, forming an impervious armor against the rain; combs, brushes, razors, bootjacks, hat brushes, pin cushions, needles, scissors, and all the other great and little things without which no domestic establishment can be carried on either on ship or ashore. Various contrivances were resorted to by those who lost their state-rooms, and the ingenuity exhibited under the circumstances would have astonished a landsman. Here is a little corner which was set apart for a water jar, but which has been converted into a sort of dressing chamber. The jar has been removed, and in its stead a basin stand is erected, while upon a little hook above it hangs a towel, and the whole three-cornered concern is enclosed by a curtain formed of canvas, behind which the owner performs his morning ablutions and arranges his toilet. The oil carpet furnished by Uncle Sam's agents (and it's a very poor affair) was taken up, the bulkheads torn down, and the stanchions soon shared the same fate; but in their stead were placed strong iron braces, or arches, to support the immense beams which extended under the spar deck, from side to side of the vessel. In some places, while the state-rooms were torn down, just enough of the berths were left to allow the occupant to lie upon one side, making it absolutely necessary for him to get up altogether before he could turn on the other. But after all the inconvenience and annoyance which attended these alterations, there was a novelty in the change which gave it a sort of attraction. The carpenters made a tremendous noise when at work, and the confused sound of hammering, sawing and filing, was any thing but pleasant; but it was nothing compared to a good strong patriotic democratic mass meeting in the Park, or an excited, belligerent and pugilistic crowd in Tammany Hall.

Other changes and preparations were made on the Niagara at Portsmouth, among which was the attachment of a cable guard to her stern, and of which a description will be found in the more advanced pages of this work.

THE NIAGARA AT LIVERPOOL.

The necessary alterations having been made in the ship during her stay at Portsmouth, she left that port for Liverpool on the 20th of June, where the cable was to be coiled and the machinery fitted up previous to her departure for Queenstown, Ireland, which had been decided on as the place of rendezvous for the Telegraph Squadron. The Niagara arrived in the Mersey on the 22d, where she attracted as much attention as she received during her detention in the Thames. The Captain and officers were overwhelmed with attentions, and found it impossible to meet all the demands of public and private hospitality. The Chamber of Commerce gave them a dinner, the Mayor of Liverpool another, and the American residents a grand banquet on the Fourth of July.

It was the first celebration of the national anniversary which had ever taken place in that city, and from beginning to end was a most successful affair. There are only twenty-five American residents in Liverpool—a small number, it must be acknowledged, but they were not, as they proved, too small numerically for what they undertook, and what there is no doubt will serve as a precedent for future imitation.

The officers of the Niagara were all dressed in uniform, and as the steamboat which conveyed them from the ship landed at the pier, they became the subject of the most intense curiosity to all who saw them, and wondering eyes displayed their anxiety to know what the whole thing meant. As they passed on their way up the pier, the following colloquy took place between two of the most curious.

"What are all these officers doing here?—what does it all mean, I wonder?" inquired one of these of the other.

"That's what I've been trying to find out myself," he replied, "but nobody seems to know. I hear that they're the officers of the great Yankee man-of-war that's agoin' to take that 'ere cable, but what they're a goin' to do I don't know."

"I'll tell you what they're about" said a third chiming in—"I'll tell you what they're about: this is the Fourth of July, and they re going to a great dinner."

But this did not enlighten them any the more, so the third party had to give them some of the particulars regarding the day, and informed him that all the American flags were displayed in honor of the occasion.

On the arrival of the officers at the hotel, they were received by the committee, by whom they were introduced to the rest of the company. When the ceremony of introduction was over, the whole party proceeded to the dining hall. This apartment was handsomely ornamented for the occasion. Over the entrance the American flag was displayed: at the opposite end was a rather fierce looking specimen of the bird of Jove, while upon the walls around the apartment were hung engravings of the telegraph fleet, the signers of the Declaration of Independence, a portrait of Washington, the American Senate in session, and a fac simile of the Declaration itself. When the dinner was thoroughly discussed, the company passed the rest of the evening in speech making and the interchange of friendly sentiments.

Among those who visited the ship while in the Mersey was Prince Napoleon, the son of Jerome, and another of the nephews of his uncle. He was attended by his suite, consisting of the following gentlemen:—Le Baron de la Ronciere, capitaine; le chef d' escadron d' état Major Ferri; Disant, aide-de-camp du Prince chef d' escadron de cavalerie; Clerc, écuyer du Prince; M. Regnault, membre de l'Institut; M. de Chaucourtais, engénieur des mines; M. Arago, son of the astronomer; Inspecteur Général des Beaux Arts; le capitaine de frégate Silva; commandant le yacht Reine Hortense; Hamelin, lieutenant de vaisseau, and Miet, enseigne de vaisseau. It was understood that the prince was to visit the ship *incog.*—that is, every body, from the captain down to the powder monkeys, were to know who he was—at least such is the meaning of the word, as established by royal usage and custom. The young English Prince is to make his tour of Europe in the same style; and when all the other members of the royal family set out on their travels, it is to be presumed they will adopt a similar course.

The Prince and his suite came alongside in a steamboat, and his Imperial Highness was the first to come on board. The captain invited the whole company into the cabin, where he explained the different features of interest in the enterprise to them. The Prince is said to be a remarkable likeness of his great uncle, but he is much taller, being about five feet eleven. He has certainly the Napoleonic face, and might easily be picked out in a crowd as a member of the family; but that imperial expression which is seen in all the portraits of the First Napoleon, is wanting in the nephew. He is about thirty-five years of age, and resembles his uncle, not only in the face, but in the peculiar stoop of the shoulders by which the Little Corporal was distinguished. The Prince is exceedingly affable in his manners, and although his knowledge of English appears to be somewhat limited, he manages to carry on a tolerably animated conversation with the partial aid of an interpreter. Captain Hudson posted him up in all the particulars about the cable, the way it was made, the way it was to be laid, and, last of all, the way the ships were to take when engaged in paying it out. He then took the Prince and suite around the vessel, and showed them all that was worth seeing, and when he was taking his departure manned the rigging and gave him three cheers. The Prince was very much gratified with his reception, and invited the captain to dine with him the same afternoon.

The Niagara was as great an object of curiosity and wonder here as she was to the people of Gravesend, when she was lying in the Thames, and her fame extended far and wide throughout the country. Captain Hudson, for the purpose of giving all who desired to see her an opportunity of doing so, permitted one of the ferry companies to bring passengers alongside, but issued an order that they should not be allowed to go below the spar deck, or in any part of the ship where they might in any way interrupt or interfere with the workmen while employed in coiling the cable and putting up the machinery. As a large number of persons availed themselves of this privilege, the ferry company reaped quite a harvest, and of course took every means to keep up the public interest in the ship. They issued large posters, which stared at one from the walls near the wharves, and ornamented the wheelhouses of the steamboats plying to and from the ship. The public were notified, through the means of these, that "the Leviathan United States frigate Niagara is to be seen from nine o'clock A. M. to eight P. M.;" and further, knowing that no visitors were permitted to come aboard on Sunday, they endeavored to attract passengers by announcing that such and such boats pass the Leviathan American Ship on their way to such a place, and that they would go round her for the purpose of letting them have a full view of this "monster of the deep." For the privilege of visiting the ship the ferry company charged one shilling sterling a head—about twenty-five cents of our money—the price of admission to any of the negro operatic entertainments in New York. With some of the people a shilling is quite a large amount of money, and it is often as much as many receive for half a day's labor. It is easy to imagine from this what an event they considered the appearance of a vessel of this description in their waters, and that a visit to her is something to look forward to as a treat which they might enjoy only once in half a century. In this state of mind they came on board, and were astonished that they were not allowed to go all over, even into the cabin and officers' wardroom, both of which are as private as any gentleman's house could be, and which it is really a privilege to be permitted to enter. Some of them did not understand this, but, supposing that the shilling entitled them to the right of going wherever they pleased, were considerably disappointed when they found that they were confined to the spar deck, and that the other parts of the vessel were shut against them. One of these went up to the officer of the deck, and, with a look of extreme disgust and dissatisfaction, said he desired to go below.

"I should certainly allow you to do so with pleasure," replied the officer, "but there is an order against permitting persons to go below this deck, as they might interfere with the operatives."

"But I want to see it, you know," said the visitor; "I paid my shilling to look at every part of the ship. I was promised that I should see the berths below and all the ship underneath, when I gave my money."

This was said with a manner and in a tone of voice which would lead a person to suppose that he had been swindled out of his shilling, and that the officer himself was a party to the transaction.

This ended the conversation, and the visitor left the ship in high dudgeon, leaving an undecided impression on the mind of the officer whether he intended to sue him for obtaining money under false pretences, or that his indignation had so far got the better of him as to deprive him utterly of the power of replying in a manner that would do justice to his feelings.

THE COILING OF THE CABLE.

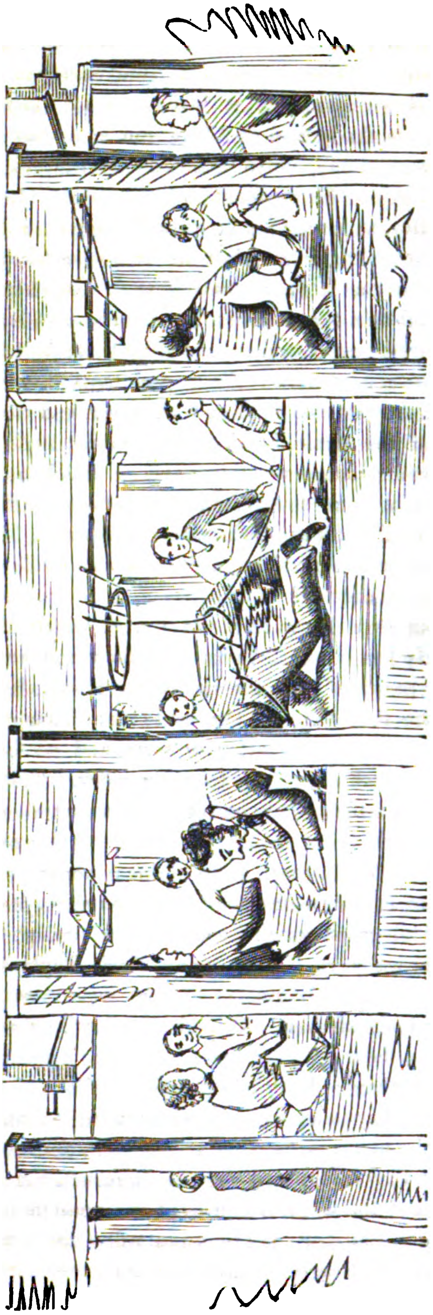
The coiling of the cable at Liverpool occupied three weeks, and although a somewhat tedious operation, possessed many features of interest.

The men employed in the work were, with the exception of half a dozen who were engaged by the Atlantic Telegraph Company, sailors on the Niagara, who volunteered for the purpose, as none but such as were willing to serve and freely offered themselves, were drafted from the crew for this service. They were informed that none but volunteers should be employed, and of its nature and character; the difficulties by which it would be attended; the wear and tear of clothes, and the tedious task on which they were about to enter—explaining, in fact, all its objectionable features, so that after they should have entered upon it they might not be able to say they did so in ignorance of what they were required to do. The objectionable features, however, did not seem to deter them from coming forward in large numbers, and offering their names, from which a strong force was made out for the work. They were perfectly enthusiastic about it, and it seemed to be a matter of rivalry among them as to who should be accepted. About one hundred and twenty were enlisted for the service, and these, with ten of the operatives of the company, formed the great corps of cable coilers on the Niagara. The day was divided into watches, and as there were about thirty men on each watch, they were required to work only six hours out of the twenty-four.

A visit to the coil when all hands are engaged in packing the cable, and when it is coming down through the hatch into the circle or circus that is prepared for its reception, is full of interest. To make your way successfully into that part of the ship is no easy task, and if not acquainted "with the ropes," one must expect to receive many a knock in the head or legs, by running foul of planks, or chains, or ringbolts, and twenty other things, the names of which are known only to the initiated. After a descent of some twenty feet you find yourself in the lower hold of the vessel, looking over the little wooden wall that bounds the circus and keeps the outer part of the coil in its proper place, on a large mass of what appears at first sight to be solidified tar, with a cone rising in the centre like a miniature representation of a mountain peak. Thirty men, with blackened hands, blackened feet, and clothes that are rapidly changing to a deep mourning color, are standing in a circle about half way between this same cone and the outer edge of the coil. There is one who is constantly walking round this circle with somewhat of the steady jog trot speed of an old mill horse, and who, in his revolutions, pays out the cable to each man as he passes him. He just gives him sufficient for his share, for if he were to give him a foot over the exact amount required, the separate coils would be unevenly laid, and great delay would be caused by having to go over the work again. If he walks fast, therefore, he is obliged to pay out in proportion to his rate of speed, but both walking and paying out are so nicely proportioned in this respect that he is very seldom obliged to correct any mistakes.

This is the simple process of coiling the cable—the mere mechanical part of the work, and nothing can be more dull or monotonous, or stupidly uninteresting. It has, however, a social aspect which it would be unjust to overlook. The thirty operatives who sit around the cone, sometimes a few inches, and at other times twelve or thirteen feet from it, are not mere automata, but men, and a good jolly set of fellows they are, with the ready joke, the quick repartee, budgets bursting with yarns, and riddles, and conundrums, and Joe Millerisms, mixed up with an abundance of mother wit that if possessed by one individual would immortalize him forever in the annals of the comic and humorous. There is one who stands high in repute among the particular watch to which he belongs, and whose fame has spread to such an extent among the the other watches that they would raise a subscription to buy his time for their own especial amusement. He is a prince of good fellows—a regular Jack Tar—well stocked with yarns that leave even the inventive powers of Munchausen in the shade, and as full of fun as an egg is full of meat—provided it be a good one, which makes all the difference in the world, so far as the accuracy of the comparison is regarded. But with all their jokes, and riddles, and yarns, and conundrums, they do not neglect their work, for while in their merriest mood, the cable is packed away with as much rapidity as if they bestowed their undivided attention on it, and kept as silent as a congregation at a prayer meeting. They call themselves the telegraph watch, and it is with no little feeling of pride they regard their position as coilers. The superintendent, who is placed over them to see that they do not neglect their work, and who sits in that little box outside of the circle, has no occasion to display his authority, for they are so willing, and so active, and so quick, and so earnest, too, that there is really no necessity for his supervision. He may now and then throw in a word by way of showing that he is in his box; but his occasional requests or exhortations to the men to "be lively now," are entirely unnecessary; they are both active and lively, and he knows it as well as a man ever knew any thing with which he was thoroughly acquainted. He has his part to perform, however, and when he tells them about once every half hour the same thing that he has been telling them ever since the first yard of the cable was taken on board, they know that after all it is only a matter of form, and no insinuation or hint that they are not attending to their work. They know, too, that he is just as good a fellow as any one of their own number, and that he enjoys a joke as well as those inside the circle. After all the dulness and monotony of the work, there is no dulness about the workmen, and the time passes so rapidly with them, that they are sometmes astonished when a fresh "telegraph watch" comes to their relief.

The cable men of the Niagara were like so many Mark Tapleys, and came out most creditably under circumstances that would have damped the ardor of any other body of men. The circle of coilers, as they sat round the ring piling up flake on flake, were more like a social party assembled for amusement than a body of operatives who had a monotonous work to perform. They amused themselves with conundrums, both good and bad, related yarns as long as the maintop-bowline, and laughed at jokes that they had heard for the twentieth time. But withal there was no neglect of the work, which went on unceasingly from morn to night, and from night to morn, till the twenty-first day saw the last mile of it placed on board. Nearly one-half the time, too, they



COILING SCENE ON BOARD THE NIAGARA.

were reduced to a stooping posture, for, as the coils increased in height, the space between the top of them and the beams of the deck overhead gradually diminished so as to render it impossible for them to stand, or even sit upright. In this extremity they resorted to a contrivance which was no less novel than it was ingenious, and which afforded them an inexhaustible fund of mirth and humor. The operative who travelled round the circle, paying out the cable which he hauled down through the opening above him, was obliged by the increasing height of the coil, not only to stoop like his fellow-workmen, but was compelled to go down upon his hands and knees. As it was impossible, however, for him to use his hands while upon all-fours, it became necessary to devise another way of paying out to the coilers. The inventive faculties were now called into play, and the result was the contrivance which is represented in the subjoined engraving.

A belt, it may be observed, is fastened round his body, and to this again is attached an iron ring through which the cable passes, and by means of which it is thus paid out to the operators. When this ingenious contrivance was introduced, it was welcomed amid a shower of jokes from every part of the circle, and when harnessed to the "payer out," the provocation was so perfectly irresistible, that from that time to the end of the work there were enough yarns spun and stories told to make a dozen such volumes as Baron Munchausen, with a whole library of Joe Millers to boot. He was called "a fast hoss," "a bob-tailed nag," "a full-blooded racer," &c., &c., &c., and small bets were offered on his trotting round the course in less than two forty. "Hey—get along there—what 're you about—trot round, my filly—jee up now and show your training," and such like exclamations greeted him as he proceeded on all fours round the cone. "Give me a grip of your tail, old Joey." "There he goes off in a canter—ten to one on his pacing," and so the fun was kept up, the fast nag himself occasionally joining in with the company. Take it altogether, there was never such a combination of humor, fun, genius and art, as was to be found in the submarine cable circles of the Niagara, and if the circles of the Agamemnon had only half the complement, they must have been as jolly a set of fellows as ever assembled on a British man of war.

While the Niagara was receiving the cable in the Mersey, a meeting of the members of the Atlantic Telegraph Company was held in London to decide upon the debated question, whether the laying of the cable should be commenced from Valentia Bay or from mid-ocean. The engineers were in favor of the latter course, but they were overruled by the electricians, who advocated the former. And so it was decided, that the cable should be landed at Valentia Bay, and paid out across the ocean to Newfoundland. According to the plan adopted, the Niagara was to pay out her portion of the cable first, and then to splice the end to that on board the Agamemnon, which was to lay the remaining half, and land her end at Trinity Bay, the point of connection on the American side. Whatever doubts there may have been as to the greater feasibility of the mid-ocean plan, there certainly can be none now in view of the results which have attended the first and last expeditions.

THE NIAGARA AND THE TELEGRAPH FLEET AT QUEENSTOWN.

The coiling of the cable on the Niagara at Liverpool occupied three weeks, as we have said, but her departure was delayed by the fitting up of the machinery. She left Liverpool, however, on the 27th of July for Queenstown, Ireland, where she arrived on the 29th of the same month. While at Queenstown several electrical experiments were made, and satisfactory results reported, although it was subsequently admitted, that, if the cable had been successfully submerged on the first expedition, the electricians could not have sent messages through it. The Agamemnon arrived at Queenstown on the 30th of July, three days after the Niagara; and while the vessels were lying within a few hundred yards of each another, the ends of the cable on both were joined so as to make one continuous line of twenty-five hundred miles. The insulation was found to be perfect, and about ninety currents were sent through the conductor in a minute, but the electricians had not attained that perfection in their instruments necessary to secure the correct transmission of words and messages.

The whole telegraph squadron, consisting of the following vessels, sailed from Queenstown:

The U. S. Steam Frigate Niagara, to lay the half of the cable from Valentia Bay, Ireland.

The U. S. Steam Frigate Susquehanna, to attend upon the Niagara.

H. M. Steamer Agamemnon, to lay the half of the cable on the American side.

H. M. Steamer Leopard, to attend upon the Agamemnon.

H. M. Steamer Cyclops, to go ahead of the steamers, and keep the course.

The steamers "Advice" and "Willing Mind," to assist in landing the cable in Valentia.

In Trinity Bay the U. S. Steamer Arctic and the Telegraph Company's steamer Victoria were to await the arrival of the fleet, and assist in landing the cable there.

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DEPARTURE OF THE SQUADRON FOR VALENTIA BAY—THE MACHINERY AND OTHER APPLIANCES FOR LAYING THE CABLE.

The squadron left Queenstown for Valentia Bay on Monday, the 3d of August, and arrived there the following day. Advantage was taken of the passage to experiment with the machinery, which up to that time had not been tested on board the Niagara. Before referring more particularly to these experiments, however, it becomes necessary at this stage of the undertaking, to lay before the reader a detailed description of the various points which are necessary to an understanding of the whole subject. And, first of all, let us look at that wonderful plateau—that great submarine prairie, which lies between Ireland and Newfoundland, and which seems to have been placed there by the hand of Providence for this great end.

THE ATLANTIC TELEGRAPH PLATEAU.

In the course of this work reference has been made to the many things which appear to have conspired in favor of this, the greatest enterprise ever undertaken by man. The discovery of the value of gutta percha as an insulator happened at the most opportune moment, and proved of the most vital importance; and still later, at a time when the prospect of an Atlantic telegraph was not only discussed but was absolutely undertaken, a great plateau, it was asserted, extended along the bed of the ocean, exactly between the two points which it was proposed to connect. In both these instances—that is, in the discovery of this peculiar use of gutta percha and in the existence of this grand ocean level—nature seems to have given her powerful assistance towards the successful accomplishment of the undertaking. While every other part of the bed of the Atlantic is marked by the same inequalities, the same abrupt declivities and mountain heights, this is like an immense prairie, stretching over an extent of fourteen hundred miles from east to west, with an average depth of seventeen hundred fathoms, and never exceeding twenty-five hundred, entirely free from under currents, lying directly between the most advanced posts of the Old and New Worlds, and as it approaches the Newfoundland coast, north of the Great Bank, entirely free from the effects of icebergs, which ground on the shallow bottoms. It seems not only peculiarly adapted for the purpose, but as if it were absolutely designed by Providence for this very object.

The existence of this plateau was believed in some years before it was proved by actual test. Sea captains who had made frequent passages over this route, came to the conclusion that the depth of the water in this part of the ocean was not so great as that to the north and south of it—a conclusion which was based upon the indications in the difference of color. One of the theories in regard to the formation of this ocean prairie is based on the revolutions which some scientific men say were effected during the ice period. The immense granite boulders which are found on the limestone prairies of Iowa and Illinois, are supposed to have been deposited where they now are when the sea covered those vast plains. There are no rocks of a similar description, it is alleged, nearer than from five hundred to a thousand miles to the north of them, and their remarkable appearance at this distance is accounted for in a rather ingenious manner. It is believed that they were conveyed southward from the Arctic regions in the frozen embraces of gigantic icebergs, and that on reaching a more genial climate they were literally thawed out and deposited where they are now seen. By the deposits of these and other materials, it is argued the prairies of Illinois and Iowa have been formed in the course of those incalculable, unknown ages which passed before the earth was considered by the Creator a fit habitation for the last and most perfect of his creatures. Now, whether true or false, the theory is very plausible, and should receive a fair consideration. Here, however, it does not rest—its application comes next. If far stretching plains, which it is believed once formed the bed of the ocean, were thus built up, why should not the action of a similar agency produce a similar result? Here we have gigantic icebergs floating down every year from the north—some of them carrying with them immense rocks which they have torn from the Arctic mountains on their descent into the sea. As these icebergs have floated down into milder latitudes they have gradually become weaker and weaker, until, unable any longer to carry their weighty burdens, they have deposited them in the bed of the ocean, and on that particular part of it which has been mapped out in the charts of Lieut. Berryman, of the United States Navy, and Captain Dayman, of H. M. Navy, as the line of the telegraph plateau. Although there is no proof either for or against this statement, and cannot be so long as the depths of the sea remain unrevealed to the eye of man, it is a well ascertained fact, that large quantities of earth and heavy fragments of rock are carried down yearly from the polar regions by the huge icebergs, which descend in such numbers as frequently to render the ocean almost impassable in some latitudes. The Gulf Stream is, however, said to be the great agent by which this plateau has been built up, and but for it the Atlantic Telegraph Company would be under slight obligation to those same icebergs for the part they have performed. The Gulf Stream meets them every year just in the right spot, and, wending off in a northeasterly direction, immediately above the line of the plateau, carries with it the more solid matter with which they were freighted, and which it scatters along its route. This matter, combined with what is held in solution by itself, forms in the course of thousands of years an immense mass, sufficient, perhaps, to make an island larger than that of Great Britain. The telegraph plateau has been called a plain; but it is, more properly speaking, an immense table-land, like the steppes of the Andes, rising up from the bed of the ocean. To the south of it the Atlantic is four, five, and six miles deep, while on the plateau alone is there any thing like a uniform level. In addition to the rocks which have been deposited by the melting or melted icebergs, there is, as has been stated, a large quantity of other matter, consisting, if we are to judge from the soundings of the two officers of the United States and British navies, just named, in great part of exceedingly minute shells, so minute indeed, as to be imperceptible to the naked eye. The finding of these is considered an infallible indication of the absence of currents at the bottom of this part of the ocean. This belief is further sustained by the fact, that in the soundings of Captain Dayman and Lieut. Berryman, the slack line would be coiled and kinked over the lead, showing plainly that it had reached the bottom after the lead had become detached, which could not have been the case if the plateau were swept by currents.

The first soundings which were made were taken by Lieut. Berryman in the summer of 1853, and the second and last in the fall of 1856. These were very successful, establishing, beyond all peradventure, the existence of the plateau. In June and July of 1857, Captain Dayman, of H. M. S. Cyclops, also made soundings on the line of the proposed telegraph, and with the same satisfactory result. Some exceptions had been taken in regard to the reliability of Lieut. Berryman's soundings, but those of Captain Dayman were strongly corroborative of their correctness, making allowance for the variations of locality in the soundings of the two officers.

It must not be forgotten that the soundings of Capt. Dayman and Lieut. Berryman were made at distances of from five to thirty miles apart, and were seldom if ever taken within a mile of each other. In view of this fact the reader will at once perceive their remarkable coincidence. Capt. Dayman states in his report that whatever errors there may be in the depths given by marked lines, they are on the side of excess. The reason for this is twofold: "Firstly, the loss of time (and consequently loss of line also) in estimating at great depths, by the intervals, the exact moment when the sinker ceases to descend. Secondly, the loss of line which may be caused by the deviations from the perpendicular of certain portions of it in passing through water moved by under currents." He is of opinion that soundings in depths above 1,000 or 1,500 fathoms can be depended upon as strictly as within twenty or twenty-five fathoms, except with very small and light lines. In regard to the disputed existence of under currents, he relates the following interesting incident: "On the evening of the 16th of July, the sea being too high for the employment of smaller lines with any chance of bringing up the bottom, I sounded with the tapered whale line and a sinker of ninety-six pounds weight, trusting for the depth to the sounding machine attached, corrected for index error, ascertained with the same line. The depth thus found was 2,176; but 2,400 fathoms of line had been paid out, to make sure of detaching the weight, and, to our surprise, the 200 fathoms next to the sinker came up to the surface in one tangled coil. The sinker was detached, and the valve (as usual in the deepest water) full of soft ooze; but that part of the line which had lain at the bottom in a coil was in many places covered with the same kind of ooze, which had adhered to it throughout its passage to the surface. Subtracting 200 from 2,400, the amount of line out, we obtain by the marks the approximate depth of 2,200 fathoms, or about twenty-four fathoms more than that shown by the machine. As the ship was kept throughout the operation exactly over the line, and the depth marked thus (minus the 200 fathoms foul on the bottom) agrees within twenty-four fathoms of that recorded by the sounding machine, the indications of which may fortunately in this instance be depended upon, it would appear that the line must have been carried down nearly perpendicularly, and that, therefore, no under current affected it."

This ought to be a sufficient answer to those who insist that the whole bed of the ocean is swept by currents, and that in consequence thereof it is impossible to lay a cable ever in the great depths.

The specimens of the bottom which were brought up by Capt. Dayman and Lieut. Berryman are exceedingly interesting in more than one point of view. They show that the plateau is covered almost throughout its whole length by a soft kind of mud, which has been called ooze, and which is composed mainly of the remains of the smallest form of marine life—of creatures so minute as to require the strongest powers of the microscope to make them visible to the human eye. The plateau must not be understood as stretching across the ocean from Newfoundland, but lies rather between the 15th and 48th degrees of west longitude. The greatest depth is 2,400 fathoms, according to Capt. Dayman, while according to the soundings of Lieut. Berryman, it does not exceed 2,070. The most remarkable, and indeed almost the only declivity which has been found along the line, is that lying under the 15th degree of west longitude, where, within the course of a few miles, the depth varies from 550 to 1,750, and the nature of the bottom changes from rock to ooze, the latter having been taken up from the greatest depth.

It should be remembered here, however, that these soundings were made at such a distance from each other that the declivity may not bo so great as is supposed, and that the descent, instead of being abrupt or precipitous, is rather in the form of a gentle slope. Whatever may be its character, there can now be no dispute in regard to the possibility of laying the cable in this particular part of the plateau. This has been proved in the most satisfactory manner by the result of the expedition of 1857 and and the final expedition of 1858, which showed that there were none of those sudden runs of the cable which formed the chief obstacle in the laying of the Mediterranean cable from Sardinia to Algeria.

An attempt was made to lay the line between those two points in September, 1855, and it was proceeding most favorably, when a most alarming flight of the cable occurred. "About two miles, weighing sixteen tons, flew out with the greatest violence in four or five minutes, flying round even when the drums were brought to a dead stop, creating the greatest alarm for the safety of the men in the hold, and for the vessel." In the laying of the Atlantic cable in August of 1857 there was, as has been stated, no difficulty of this kind, although they had passed the abrupt declivity alluded to the day before the cable parted, through the mismanagement of the then chief engineer, Mr. Bright, and the defective character of his machinery. If there was one fact favorable to the success of the enterprise, which was proved more clearly than any other, it was the ease with which the line was laid on this particular part of the plateau.

From Valentia Bay to 15 degrees 6 minutes west, the bottom consists of rock, of sand, and of mud. The bottom between the forty-fifth degree of west longitude and the Newfoundland coast is irregular, and is made up of stones and gravel, but by steering to the north of the arc of the great circle, this is changed, and a thick mud, peculiarly adapted for the reception of the cable, is obtained. The same muddy bottom is found in Trinity Bay; so that no danger need be apprehended in regard to the safety of the line. On one occasion, while in latitude 52degrees 14 minutes north, longitude 30 degrees 45 minutes west, the depth being 1,675 fathoms, "broken shells of large size, which unfortunately disappeared in the hands of the surgeon who was washing," were taken up. These were the only "shells of large size" which were brought to the surface, and their disappearance is to be regretted from the new scientific facts or information which their discovery might have established. "The sounding machines," says Captain Dayman in his report, "were by Massey, with dials graduated from 160, the usual deep sea lead, to 1,500 and 3,000 fathoms." Captain Dayman also says that "the detaching sounding apparatus used was a modification of that invented by Mr. Brooke, an officer of the United States Navy." The specimens of the soundings were brought up in a tube, which being the first to strike the bottom, seldom failed to secure a portion of the material of which it was formed. Of course there was no means of ascertaining the depth or thickness of the stratum of ooze or the nature of that on which it rested, whether it was one foot, a hundred or a thousand feet; and it is doubtful whether this point will ever be embraced in the discoveries of science; nor does there seem to be any means of ascertaining whether the telegraph plateau has been built up by the deposit of immense boulders borne down from the Arctic regions by gigantic icebergs. Until science has penetrated into the profoundest depths of the ocean, and laid them as open to us as the surface of the earth, nothing satisfactory or definite, we suppose, will ever be known in regard to this theory. One fact which is at present of the greatest importance, is that the telegraph plateau, which was at one time considered a myth, does really and actually exist; and that fact being established, we can afford to wait for the solution of those other questions which have arisen from its discovery.

THE INFUSORIA OF THE PLATEAU.

The specimens which have been brought up from the plateau, and which to the unaided vision appear when dried of a white or reddish white color, bear a very strong resemblance to very fine chalk. Their appearance as they lie at the bottom of a glass vessel is that of a light brown muddy sediment, in which are observed minute hard particles, hardly any of which exceed one-fiftieth of an inch in diameter. The explanation which Mr. Thomas H. Huxley, F. R. S., to whose inspection they were submitted, has furnished us, is nearly all the information we have upon this interesting subject. We have seen the highly magnified specimens which the illustration is intended to represent, and to the perfect accuracy of which we can bear testimony. Those specimens which have just been referred to were obtained from depths ranging from 1,700 to 2,400 fathoms, and of these specimens "fully nine-tenths consist of minute animal organisms, called *foraminiferæ*, provided with thick skeletons composed of carbonate of lime." Proof of their composition is found in the fact that the application of a dilute acid produces a violent effervescence and the disappearance of the larger portion of the matter. The use of the acid is not attended with such a result if the specimen be previously exposed to a full red heat. The species of the *foraminiferæ*, of which eighty-five per cent. of the specimens consist, is called *globigerinæ*.

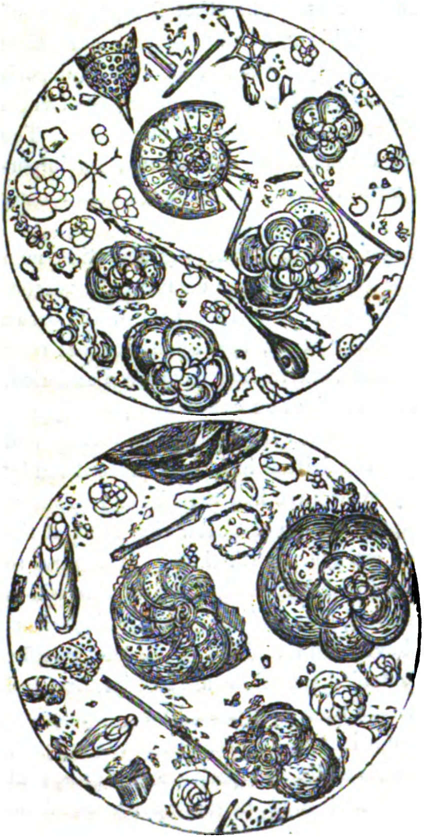
The specimens shown have been magnified about three hundred times their natural size, and are, as may be seen, of various dimensions and shapes, yet with general points of resemblance.

These *foraminiferæ*, as found in the soundings, vary in size from one-thousandth to one-sixtieth of an inch in diameter; and as the scientific part of our readers may desire to know something more about their construction, they will read the following description by Mr. Huxley, with profit and interest: "In the very young *globigerinæ* the wall of the cell, or cells, of which it is composed, is smooth and thin, but as it adds cell to cell the older ones become beset externally with tubercles, the wall at the same time thickening and exhibiting narrow canals which run perpendicularly to its plane and open between or in the tubercles. The tubercles multiply in number and elongate, so as eventually at first to resemble close set and sharp-pointed palisades, and then by the rounding off of their outer ends, to constitute a more smooth, enamel-like coat, which attains a three hundred and fiftieth of an inch, or more, in thickness. The smallest *globigerinæ* are either clear or have but slightly granular contents, but a very large proportion of the larger ones are rendered opaque by a reddish brown granular mass contained in their interior. When such specimens are treated with very dilute acids which dissolve away the calcareous skeleton, a delicate pale membrane is left enclosing the granular mass, which seems to be held together by a continuation of the same substance. The granular contents have the same form as the skeleton, and are quite soft and easily crushed. I can hardly doubt that these are the soft and once living parts of the animal itself, with or without imbedded foreign matters. The other five per cent. of the calcareous organisms are *foraminiferæ*, of, at most, not more than four or five species. The remaining ten per cent. of the whole deposit consists partly of granular matter, partly of animal, and partly of vegetable organisms, provided with siliceous skeletons and envelopes. The other specimens consist of broken fragments of *diatomaceæ*, so imperfect and so broken that they can with difficulty be distinguished among the mass."

A considerable difference of opinion exists among scientific men in regard to the birthplace of these singular forms of life. It is contended by some that they have been carried to that part of the ocean where they are now found by the Gulf Stream, and by others that they have sunk from the surface of the ocean, where they have lived and died. Both these positions, however, are assumed, as we understand, merely as a matter of speculation, in the absence of such information as further and fuller research may give. If they have drifted into their present bed by the action of the Gulf Stream, they must have had their birth in shallow waters; but then it is argued in opposition to this view that none of the *echini* which inhabit shallow water are found with them. In regard to the idea advanced that they have lived and died at the surface, from which they have gradually sunk to the bottom, it is said that some *globigerinæ*, or something that resembles them, have been found in the Western Pacific. In opposition to this, however, it is denied that these are *globigerinæ*, and so that speculation is disposed of. There is yet another proposition, which, as we have entered upon the scientific explanation of the subject, should not be forgotten. We have given the two positions—that is, that these minute organisms have lived and died in shallow waters, from which they have been carried by that wonder-working agent which performs such an indispensable part in the economy of nature—the Gulf

Stream—and that they have lived, died, and been deposited from above where they are now found; but there is yet another which must be stated. The existence of any form of life in the great depths of the sea was supposed to be impossible, but it appears now that it is not, and it is argued that if animals of a higher organization can live three or four hundred fathoms below the surface, "the difference in the amount of light and heat at 400 and at 2,000 fathoms is probably, so to speak, very far less than the difference in complexity of organization between these animals and the humble *protozoa* and *protophyta* of the deep sea soundings."

Here then we have presented the various theories to which the discoveries of these microscopic specimens have given rise, and the scientific explanations by which they are enforced. These may or may not be interesting, as the reader may determine, but they are subjects of the greatest importance to naturalists, who, it is to be hoped, will some day render them sufficiently clear and intelligible to the unscientific portion of the civilized world by divesting their description of those technicalities which, however gratifying they are to the learned writers, are generally heavy, dull, stupid, unintelligible, and sometimes alarming to the uninitiated and unlearned readers. When they know that these *infusoria*, or (not to be scientific ourselves) when these minute forms of life, some of which are not larger than the point of a pin, are just the things to form a bed for the cable to rest on or in, where there are plenty of them, as there are; that they will in course of time enter into combination with the iron wire of the cable when it is in process of oxidization, thus form-



HIGHLY MAGNIFIED INFUSORIA TAKEN FROM THE TELEGRAPH PLATEAU.

ing a concrete mass around the gutta percha insulation, and protecting it beyond possibility of injury; and that finally, no matter whether they have lived and died above the spot whence they have been taken, or have drifted there with the Gulf Stream, they are just in the very place where they are wanted—understanding these things, the people will realize their importance to the great enterprise, no matter how much naturalists may dispute regarding their birth-place.

These engravings represent the infusoria magnified three hundred times their natural size, which are so infinitesimal as to be the merest mites on the surface of a microscopic glass. Notwithstanding they are so perfect in form, so delicate in construction, and so minute in size, the bed of the plateau is so quiet and undisturbed from the action of the ocean that scarcely any of them, comparatively speaking, are injured or broken by abrasion or attrition. They do, indeed, form a sort of bed of down for the cable to rest upon.

THE GREAT OCEAN CABLE.

The manufacture of the Atlantic Telegraph Cable is one of the most interesting and at the same time one of the most simple processes it is possible to conceive. The cable is formed of the strand of seven copper wires which compose the conductor and which occupy the centre; the gutta percha insulator, the hempen serving, and the outer wire covering or protecting armor.

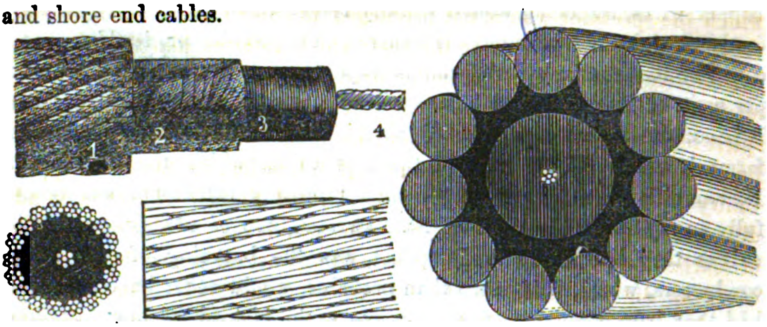
The discovery of the peculiar properties of gutta percha, dates back to the year 1842 or 1843, but its application to submarine telegraphing did not take place till about the year 1850, when its value as an insulator was proved by the laying of a cable across the English channel. Up to this period, the manufacture of the raw material was confined to the making of water pipes, machine belts, picture frames, and innumerable other articles for which it was considered especially adapted; but the impulse given to the trade by the new use which was found for it created an increased demand, and it eventually became one of the most valuable and important articles of import.

The tree from which the gutta percha is obtained grows in the East Indies, and the principal market is at Singapore, from which the London Gutta Percha Company procure their supply. It is sent to them in its crude state, and has to be subjected to the several processes of mastication, boiling and kneading, before it can be employed in the manufacture of the submarine cable. In this condition, as it lies in the storehouse of the company, you discover among the mass several rough specimens of the skill of the natives. Here is something that was evidently intended for a camel, although there is no trace of a hump on his back, and he has lost a leg during his long sea voyage, but the artist has still left sufficient evidence by which to tell the species to which he belongs. There are quite a large number of animals besides this, but the task of classifying them would exceed even the powers of Cuvier himself. This one has the bill of a duck on a head that otherwise resembles that of a monkey, and that other is a combination of bird and quadruped, for the like of which you might search in vain among all the fabulous mythological or manufactured animals that were ever created by the inventive genius of ancient poet or modern showman. All these—the animal with the monkey's head and duck's bill; the three-legged and humpless camel—in a word, the whole menagerie—are put into immense cauldrons, with the common mass, and boiled, and boiled again, until they are rendered as soft as dough. In this state the gutta percha is thrown into a machine called a masticator, in which it is literally torn into shreds, and from which it is again taken to be again boiled. By this process it is purified and freed from all foreign materials which may have entered into it while it was being collected by the Hindoos. But it is not yet fit for the work for which it is designed, and must be again masticated, cleansed, and kneaded several times before it can be used in the covering or insulation of the copper wire along which the electric current is to pass. When it has been thoroughly kneaded, it is so perfectly plastic, that it can be joined with the greatest ease, and in such a manner that it cannot be torn apart at the point of adhesion. The two parts being joined, become as completely one, as united and blended as two glasses of water when poured into the same vessel. This property which it possesses is peculiarly valuable, when it is found necessary to repair any defects in a cable during the process of paying it out. In such cases it is only necessary, after splicing the internal copper wire or conductor, to heat the parts of the gutta percha which are to be joined. When this is done, the open space or break is covered by layers of gutta percha as thin as the page on which we write, and eight or ten of which layers are required to make the broken part uniform with the rest.

Over twenty tons of the raw material are manufactured every week in the factory, and in the boiling department alone, some forty or fifty vats or cauldrons are constantly in use. On entering the first floor, you see them throwing out their little jets of steam on every side, while the boiling waters bubble up through the openings on top, reminding you of the descriptions which travellers in Iceland have given of the hot springs of that strange country. Passing from this department to the floor above, the finishing room is reached, and here the process of coating the conductor is performed. The conductor is composed of seven copper wires, six being wound spirally round theseventh, which is perfectly straight and occupies the centre. The conductor itself, on account of its peculiar spiral form, is capable of being extended twenty per cent. of its own length before breaking, and the seven wires of which it is composed give it a decided and important advantage over that formerly used. In the case of the first cable, which the New York, Newfoundland and London Telegraph Company attempted unsuccessfully to lay across the Gulf of St. Lawrence, one of the greatest difficulties they had to contend against, was the breaking of the three conductors, which, it is more than probable, would never have occurred had they been composed of seven wires each, instead of one. Should the whole seven break under an excessive strain, the continuity or electric connection will not necessarily be destroyed unless they all give at one point, an occurrence which may be almost regarded as beyond probability. The advantage which it has over the single wire conductor cannot be doubted, since it has been practically tested with the most gratifying success. It has been proved that the drawing out or attenuation of a mile of the copper wire to ten-elevenths of its thickness reduces its power of conduction only a thirty-seventh part.

The covering or insulating process is effected by means of a cylinder, in one end of which a die of the required size is placed, and through which the gutta percha is forced with a piston. As it passes through this die in the form of an elongated pipe-stem, or maccaroni, the core is forced through its centre at a uniform rate of speed, and the now insulated conductor is cooled by drawing it through a water conduit some fifty feet in length. To insure its perfect insulation the core is covered with three coats of gutta percha, after which it is ready to receive its additional protection of prepared hemp and iron wire. The shore part of the cable, which will be about an inch and a-half in diameter, or twice the thickness of the portion intended for the deep sea, has five coverings of gutta percha, and each one of the outer wires which are to serve as an armor for it, is at least a quarter of an inch thick. It is a massive affair, and capable of resisting a strain equal to forty or fifty tons. Some idea may be formed of the quantity of iron consumed in the work, when it is known that the protecting armor requires 379,312 miles of wire about the thickness of a common pin, while the length of the copper wire required for the conductor is 21,084 miles. The protecting armor is composed of eighteen strands, each strand consisting of seven wires, wound round the insulated core in a spiral form, and being about the twelfth of an inch thick.

The following engravings show the exact thickness of the deep sea and shore end cables.



END AND SIDE SECTIONS OF CABLE AND END OF SHORE CABLE.

1. Wire—Eighteen strands of seven wires. 2. Six strands of yarn.
3. Gutta percha—Three coats. 4. Telegraph wires—Seven in number.

The manufacture of this part of the cable is very simple. The conductor having been thoroughly tested, to prove its complete insulation, the cable is sent to the factory, where it is covered with the iron wire and prepared for coiling. Before the insulated wire leaves the gutta percha factory, every sixty miles of it are thoroughly examined. Should any flaw be found it is immediately repaired, and the cable is again subjected to the electric test, when, if it prove perfect, it is allowed to remain undisturbed until such time as it is placed on shipboard. The break of continuity or connection in the core from imperfect insulation, or a parting of the copper wire, is made known by the ringing of a bell, which sounds the alarm the instant the interruption takes place, and continues ringing so long as the battery sends the electric stream along the conductor. The author was an observer of this test, and saw it applied with the most perfect success. The connection was temporarily destroyed; but the moment the battery was brought to bear upon the conductor, the unerring indicator, the little bell, commenced ringing, and kept it up till the battery was detached. Through the means of that same infallible detective every mile of it is not only proved before leaving the factory, but as it goes into coils on shipboard.

The covering of the Atlantic cable with its wire protection or armor is performed by a separate establishment, and is an entirely different process from that just described. There are in fact two of these manufactories, one at Birkenhead, opposite Liverpool, and the other at Greenwich, about five miles from London.

The factory at Greenwich is situated on the banks of the Thames, and about a mile from the hospital for superannuated sailors. It is in the very centre of a manufacturing district, and in view of the mammoth iron steamer Great Eastern. There is nothing in the external appearance of the building which would give any indication of the character of the work performed within its walls, and the only intimation which the spectator who is not privileged to enter has of it, is that conveyed in the immense sign on the roof, which informs him that the submarine telegraph cable is manufactured there. The whole establishment is surrounded by a wall eight or ten feet high, to keep out that spirit of inquiry which, whether laudable or not on the part of the public, does not receive the same amount of toleration, or the same opportunity in England that it does in the United States. There is, in addition to this wall, a porter at the gate, who is one of the most polite of Cerberuses, and who guards it as well against all unprivileged applicants as did the Russians the fortress of Sebastopol. The only approach to it is by a gravelled pathway which is terribly destructive to shoe-leather, and a journey over half a dozen miles of which would use up the best pair of boots ever made; and yet, strange to say, these gravel footpaths are so common about London, and all over England, as to give rise to the belief that the interest of the shoemakers is among the strongest in the kingdom, and that the authorities who have the charge of the making and repairing of roads, must have a strong sympathy with that time-honored and indispensable class of tradesmen. Happening fortunately to be one of the privileged few who were permitted to enter the factory, I visited it during my stay in London. On passing the gate, I discovered on each side a circus, thirty or forty feet in diameter, which had been dug to the depth of about four feet. In both there were eight coils, each containing from twenty to three hundred miles of the cable, and some three or four of which were receiving it as it came freshly made out of the factory. The men who were engaged in packing or coiling it had their hands and feet besmeared with tar, and the whole establishment was redolent of the same material. But no matter how objectionable the tar may be, it is an excellent preventive of rust, and absolutely indispensable in the manufacture of the cable.

The two circuses, or basins, as they are, perhaps, more properly called, are so constructed, that they can be filled to the top with water, to allow of the complete submersion of the cable.

The machinery in the cable factory is very simple, and although at the first glance it appears rather intricate and complicated, a few minutes' inspection makes it all perfectly plain. The first process is the serving or covering of the gutta percha insulation with hemp steeped in a composition of tar and pitch, after which it receives the external protection or wire armor. The preparation of the hemp and the winding of it on bobbins engage the services of a dozen boys, who work from morning to night, and from Monday to Saturday, with all the steadiness and regularity of their older fellow operatives. Hundreds of miles of this hemp passes through their hands every week, and although it is the least important of the different materials of which the cable is composed, still it could not well be done without. The serving of the hemp on the core is accomplished by means of a revolving machine, on the periphery of which are placed seven or eight of these bobbins, the core of the cable passing directly and perpendicularly through the centre. As this machine revolves, the bobbins also revolve on their own axes, paying out the hemp, which is thus served on the core. The process can perhaps be more simply illustrated by taking two flat circular pieces of wood of the same size, say about three feet in diameter, and each having a hole in the centre. Let these be joined by three or four upright bars of wood or iron set at equal distances apart, all placed within about an inch of the periphery. This done, the next thing is to get the requisite number of spools, each spool representing a bobbin, seven being sufficient for the purpose, and to fasten them on axes to the lower one of the two circular pieces of wood. The machine is now finished and in working order. Through the central holes run a small rope, and wind upon each one of the spools enough twine to illustrate the process. The machine having been set on a pivot must now be put in motion, the ends of the twine joined to the rope about an inch above the top of the spools, and the rope itself drawn slowly through the central holes. Then, as the machine revolves and the rope is drawn upward, the spools will also revolve, paying the twine out and serving it on the rope. Here you have a tolerably fair illustration of the manner in which not only the gutta percha is covered with the hemp, but in which the last or wire protection is laid on. The velocity with which these machines revolve is somewhat calculated to startle nervous people on a first visit to the factory, and should some of the bobbins happen by any chance to fly off while they are in motion, they would make wild work with any thing with which they might happen to come in contact. But fortunately they are so well secured that accidents of the kind seldom or never occur. While the cable is being paid out from the machine in its finished state, it passes over several small wheels and through vats of tar, as it is drawn out by the men who are engaged in coiling it in the basins. Five of the wire-covering machines were in operation at the time of our visit, and these gave about twelve miles as the aggregate of their day's work.

THE PAYING-OUT MACHINERY.

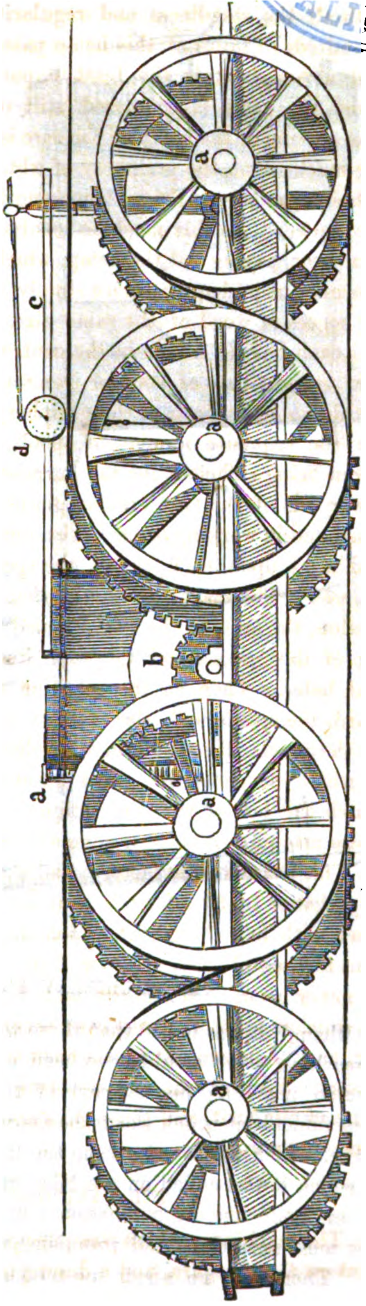
The machinery which was put up on the Agamemnon is a duplicate of that on the Niagara, and a description of one will therefore answer for both. In addition to the winding-in and paying-out part of it, there was an engine of twenty horse power, which was always to be kept in readiness should it be found necessary to use it in taking up the cable, an operation which had always failed.

This portion of the machinery was made the subject of severe criticism, and it was asserted, in advance of its trial, that it was too heavy and too powerful for the work for which it was constructed.

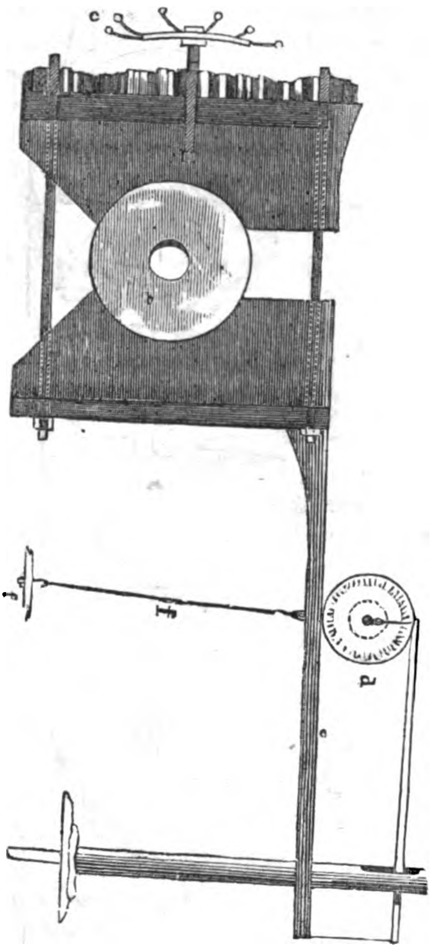
The machine was composed of four V sheave wheels, which are indicated in the following engraving by the letters a a a a.

The cable passes over these in the manner exhibited in the engraving first entering the groove or sheave in the second sheave wheel, passing over and under it. It then passes over the first sheave wheel, and taking a turn over the greater part of its periphery, is carried to the fourth, from which it is delivered to the third, passing finally from that to the sheave wheel at the stern, and over that again into the ocean.

The brake wheels, which are shown by the



THE PAYING-OUT MACHINERY.



FRICTION BRAKE OF "PAYING-OUT" MACHINE.

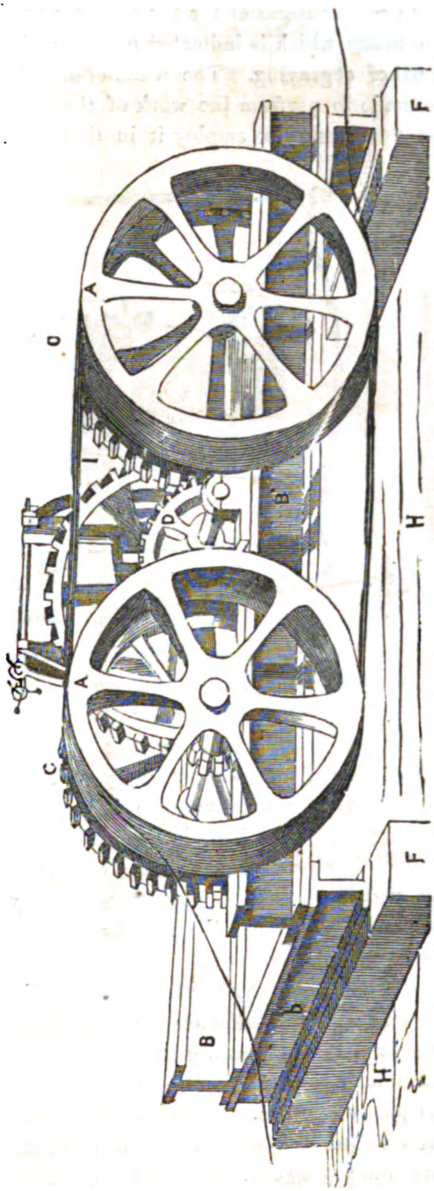
letter *b*, are turned by a pinion, as in the winding-in machine, and revolve with a velocity proportioned to the size of the sheave wheels, each of which is five feet in diameter. The brake wheels are acted upon by wooden blocks, screwed together as represented in the Friction Brake, and when compressed, act upon the lever *c*, which is connected with the indicator *d*. This indicator shows the strain on the cable.

The brake is worked by means of the handle *e*, beside which there was always a man stationed to work it when required. The indicator is similar to a patent spring scale, and *f*, *f*, is simply a line and weight to keep it from being pulled out of its place by the action of the lever.

THE MACHINERY FOR WINDING IN.

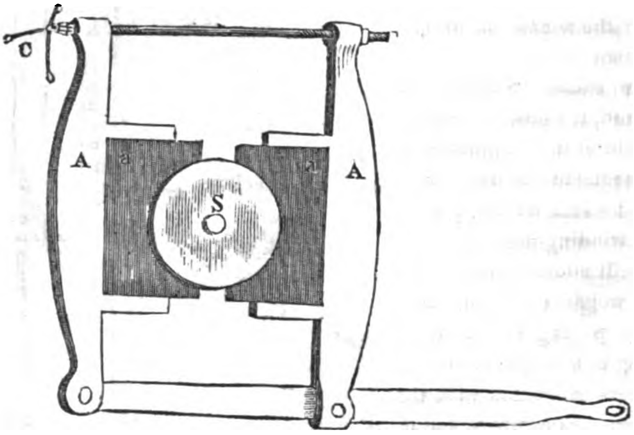
Although it was hoped that there would be no occasion for the use of this machine, yet it would have been a culpable want of foresight to have neglected providing one for each of the cable ships. One of the most serious difficulties which was to be apprehended in the work of paying out was that which might arise from the kinking of the cable. But the ease with which it was coiled on the Niagara—frequently at the rate of three miles an hour, and on one occasion at the rate of five miles—was certainly most auspicious and promising for the success of the final operation. There was no strain, no tendency to kink, and with the exception of a slight twist which would be perceptible even on a thread when unwound from a spool, there was nothing to justify the fear that there would be any obstacle in the way of the successful accomplishment of the work from such a cause. Still, as has been said, it would have been culpable in the engineers to have neglected to make provision for such an emergency. The winding-machine, although it added considerably to the weight of the machinery for paying out, was, according to the opinion of the engineers connected with the enterprise, as compact and as light as it could possibly be, considering the work which it had to perform. The following representation gives a correct view of it, and with the explanations of the various parts, will render it clearer to the popular understanding than any unaided verbal description.

A A are two grooved drums, sheaves about seven feet in diameter, having five grooves on the periphery of each. The cable is wound round each drum five times, passing from one to the other in succession till all the grooves are filled, when each revolution of both wheels pays it out to the hands of the men who stand ready to coil it as it is taken up from the ocean. The object of passing it round these drums so often



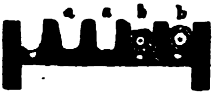
THE WINDING IN MACHINE.

is to render it easier for the engineer to check it by the application of the brake, which is indicated by letter E, and which is presented more in another engraving. The winding-machine is so constructed that it can be made to perform the work of the paying-out machine should it be found necessary to employ it in that way. In the event of its being used for such a purpose the brake becomes absolutely necessary to restrain the speed of the cable in going out over the stern. The grooves are for the purpose of keeping the cable from becoming entangled, or rather from crowding and cutting the outer wire, which would be very liable to occur were the periphery of the drum perfectly flat. The five grooves are seen to advantage in the following engraving, the letter *a* showing the groove in which the deep sea line rests, and the letter *b* that in which is represented the shore cable, the end sections of both deep sea line and shore cable being represented by proportionately sized circles, the first of which (*a*) fills up only a part of a groove, and the second (*b*) nearly the whole of one.



SECTION OF THE FRICTION BRAKE.

On the same shafts as the groove drums of the winding-in machine are the spur wheels C C, in gear with the pinion placed between them, and which is indicated by D. The shaft on which this pinion is fixed also carries the brake alluded to, and which, as has been stated, was only to be used when the winding-in machine was employed in paying out. The two iron levers A A, which are seen in the engraving of the friction brake, hold the blocks of wood *a a* to the brake wheel S. By screwing the nut C, which is connected with a right and left hand screw, the levers A A are pressed together on the wheel C, which



stops the large wheels, and by which of course the whole machine is checked when sufficient pressure is employed. There are two brakes, one of which is immediately behind the other, and cannot, therefore, be seen. The whole weight of the winding-in machine is about five tons.

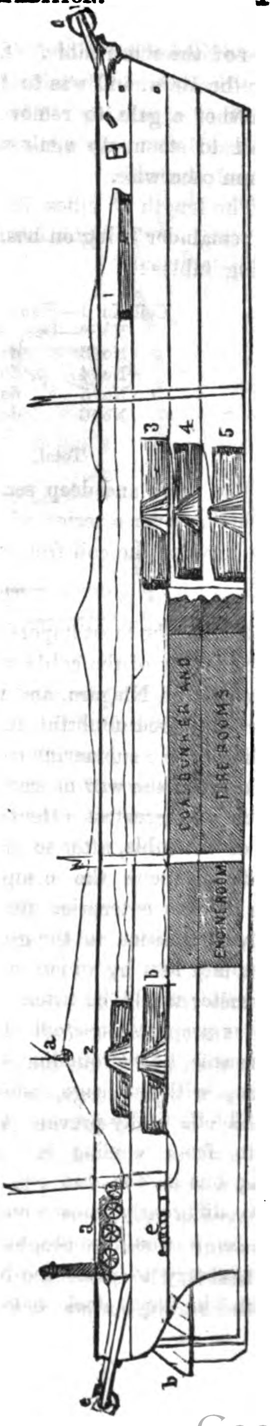
The grooved wheels, it was calculated, would run with a velocity of ten revolutions to the minute, and at this speed would wind up the cable over the wheel at the stern at the rate of three miles an hour. The paying out is regulated in the same way—that is, for every three miles of the cable passed over these grooved wheels to the wheel at the stern and from it down into the ocean, each of the grooved wheels would make ten revolutions a minute. In the winding up of the cable, which is a much slower process than the paying out, on account of the greater strain produced by the operation, the length of cable taken in would not exceed one mile and a half an hour, and the revolutions would be reduced, therefore, to five per minute.

On the same shaft with the brakes is represented the third large spur wheel I, which is worked by a pinion driven by the engine.

STOWAGE OF THE COILS ON THE NIAGARA.

The following engraving is designed to show the stowage of the coils on board the Niagara.

The paying-out and winding-in machinery is shown on a small scale by letter *a*, and the coils by the numbers 1, 2, 3, 4, 5, and 6, which also present the order in which they were to be paid out, No. 1 being the ten



SECTION OF THE NIAGARA WITH THE CABLE ON BOARD.

miles of the shore cable. Letter *f* is a similar sheave wheel to that over the stern, and was to be used when it became necessary in consequence of a gale, to remove the cable to the bow, so as to enable the vessel to steam up against the wind, as it would inevitably have been broken otherwise.

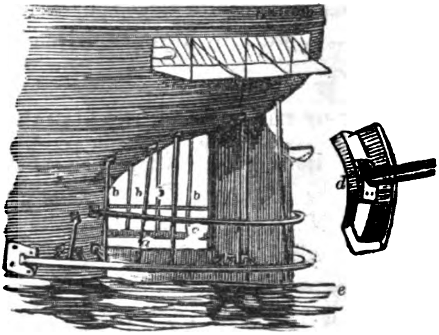
The length of miles in the different coils on board the Niagara, the remainder being on board the Agamemnon, is presented in the following tables:

			Miles.
Coil No. 1—Shore cable,			10
No. 2—Deep sea cable,			130
No. 3	do.	do.	294
No. 4	do.	do.	181½
No. 5	do.	do.	352
No. 6	do.	do.	297
Total,			1,264½

The shore and deep sea cables were to be passed to the paying-out machinery over a series of small-sized drums, placed at regular intervals between the coil from which it was taken and the machine.

THE CABLE GUARDS.

Among the most important parts of the machinery which was required in the laying of the cable, were the guards for the propellers of the Agamemnon and Niagara, and without which its successful accomplishment was considered doubtful, these being absolutely necessary to prevent the fouling of the submarine cable in the event of the ship being obliged to back out of the way of icebergs, or from other causes. It was a point to which the greatest attention was very properly given, as the breaking of the cable, after several hundred miles of it had been paid out, would postpone the completion of the enterprise for a year, in addition to the great pecuniary loss by which such a disaster would be attended. It was proposed to avoid such a disaster by surrounding the screw with a cage, which would effectually prevent the cable from coming in contact; but as the two vessels were differently constructed, and as it would be absolutely necessary to place the Niagara in dry dock before



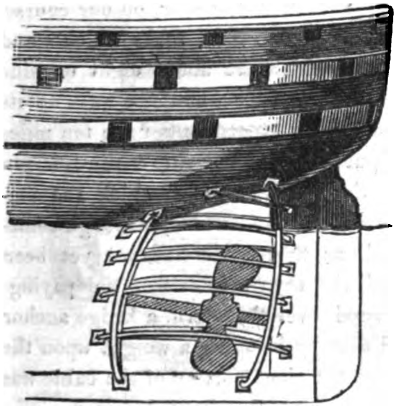
STERN OF THE NIAGARA SHOWING CABLE GUARDS.

a.—Horse shoe guard.
b.—Vertical braces.
c.—Horizontal braces.
d.—Section of guard and vertical brace.
e.—Water line.

the cage could be fastened to her, it was decided to abandon it in her case, and to adopt a guard in its stead. The cage was, therefore, only used on the Agamemnon, which was docked for the purpose. From the subjoined drawings the reader will perceive at once the difference between the two contrivances.

In this drawing it will be seen that there are two guards of iron which sweep round the stern of the Niagara, in the form of a semi-circle or horseshoe, enclosing both the propeller and the rudder, the lower being about a foot above the water line, and the other at an elevation of some seven or eight feet from it. As the ship drew three or four feet more when loaded with the cable, the lower guard would, of course, be submerged to a corresponding depth, forming a still better protection when in the process of backing. This guard was placed about three feet from the flange of the screw, and between eleven and twelve from the side of the rudder post, so that its full diameter at this point was from twenty-two to twenty-four feet. The length of the perpendicular bars varied from seven to fourteen feet, and the whole presented so small a surface to the action of the water, and was so well fastened with bolts and screws, that it was expected to resist all the pressure to which it might be subjected, either from the inside or outside.

In the case of the Agamemnon, to which the cage was applied, and of the stern of which the following is a correct drawing, the difference will at once be seen when compared with the Niagara. The counter or under rounding of the stern is much nearer to the water mark than that of the Niagara, and to this cause is owing the difference in the open space which is so apparent in a comparison of the sterns of both ships.



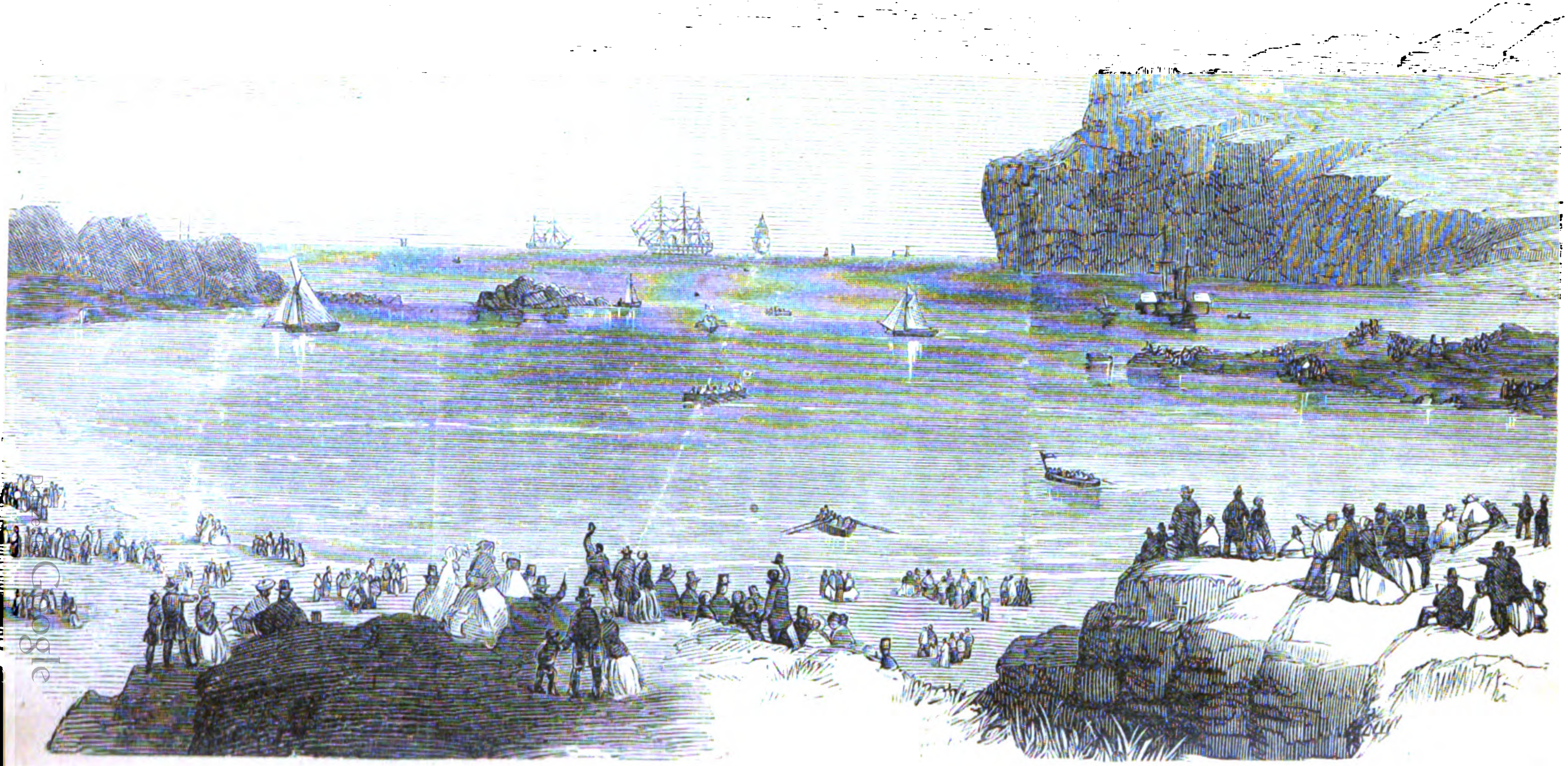
THE STERN AND SUBMARINE CABLE GUARD OF THE AGAMEMNON.

The cable protector presented in this drawing is, literally speaking, a cage made of bars of iron placed almost at right angles with each other, and inside of which the screw is observed. It descends below the water-mark; the perpendicular bars, of which there are two on each side, being screwed to the counter and the keel of the ship, not more than three or four feet of the whole cage being visible above the surface of the water. The horizontal bars are rounded out so as to form a section of a circle, the diameter of which is about twenty-four feet, leaving a space of about two feet and a half between them and the sweep of the screw. The horizontal bars in this instance, instead of being brought round the rudder, are screwed into the rudder post, and the whole cage was subjected more to the action of the water than the guard of the Niagara, on account of its deeper submersion. Both the guard and the cage were the best that could be devised at the time, and proved efficient for the purpose they were intended to subserve.

PASSAGE TO VALENTIA BAY, AND TRIAL OF THE MACHINERY.

The day of the departure of the Telegraph Squadron from Cork, was not as auspicious as could have been desired, but there was no time to be lost, and, fair or stormy, it was absolutely essential that they should leave. Five o'clock was the hour fixed for their departure, but it was past six before the whole squadron was under way and out of the harbor. The British side wheel steamer, the Leopard, was the first to move, and about half an hour after she had got out to sea the Agamemnon followed. Next in order was the Susquehanna, the Niagara bringing up the rear. Soon after we passed the entrance the order of the procession underwent a complete change, for the Niagara in a few hours took the lead, leaving the other three behind. In less than an hour after we had left the Cove of Cork we lost sight of the entrance, behind the bold headlands which mark nearly the whole of the Irish coast; and early the following morning we had passed Cape Clear, the most southern point of the island. The Susquehanna and the Leopard were the only two vessels in sight, the Agamemnon having disappeared during the night. We proceeded, however, on our course, and at eleven o'clock were off the Skelligs, two bluff rocks which stand out a mile or so from the mainland, and which are about eight or nine miles from Dingle bay. In a little more than an hour we were at its entrance, and before running in made three experiments upon ten miles of discarded cable, which had been put on board our ship while lying in the Cove for the purpose. It was the same wire with which the machinery on the Agamemnon had been tested, and which, although somewhat defective, served almost as well as that which had not yet been used. The cable was passed round the sheave wheels of the paying-out machine, and then, as it was passed over the stern, a kedge anchor was tied to the end to sink it, and thus by bringing a weight upon the wheels, caused them to revolve until a sufficient portion of the cable was paid out to enable the vessel to proceed at the desired speed. The anchor having been fastened, was dropped into the water, but the weight was not heavy enough to produce the desired result. The wheels of the ponderous machinery refused to move, and the anchor, after swinging to and fro from the stern for a few moments, dropped sluggishly into the water, but without effect. The shafts were oiled, and about forty men were put to work to pull the cable over the wheels by main strength, and pay it out until such time as there should be enough of it over the stern to bring the strain necessary to set them in motion, without the aid of any other force than that exercised by the weight and strain of the cable itself. It was a slow and tedious process, and to some who were impatient of delay, it was doubtless a most vexatious one. The first half hour passed, and still the men continued hauling it over the sheaves and passing it overboard, without effecting the slightest change, but in less than five minutes the wheels began to move, slowly at first, and then with increased speed, till the rate of paying out reached from two to three miles an hour. All this time there was no apparent tendency to kink, and there was now an opportunity after all the trouble, and all the pulling and dragging, to test the machinery in a satisfactory manner. There was no difficulty about paying out, but there was one most essential point to be settled before its success could be finally established. It was necessary to try the action of the brakes, and to do that the cable would be most probably subjected to a strain which it might be found too weak to resist. It was, however, valueless for any other purpose, and so it mattered little what strain it might be subjected to. So the brakes were put on, and the wheels over which it passed having been stopped in this way, it broke in a very few minutes. The object of the brakes, as has been explained, is to stop the cable when a kink takes place, or when any defect is discovered before it passes over the wheel, so that it may be repaired before it descends into the water.

A second experiment was tried and with the same result, and a third ended in the same manner. The Niagara now proceeded on her way into Valentia Bay, which is three or four miles from the entrance of Dingle Bay. While on our passage in we had a magnificent view of this part of the coast, and a fine opportunity of judging of its scenery. The County of Kerry is one of the most southern counties of Ireland, and its whole line of coast is remarkable for its rugged character, and for the deep indentations which the action of the sea, from age to age, has made upon it. Huge mountains rise up on almost every side, and great masses of rock, in a thousand fantastic shapes, stand out miles from the land, terrible as those of which the Greek mariners stood in such awe, and of which such tales of horror have been handed down to us. Two immense rocks, which look as if they had been flung from the huge mountain that guards the left side of the entrance of Dingle Bay, stand there like grim and weather-beaten sentinels. On the other side is a long mountain range, the face of which, looking seaward, is worn with deep fissures, while its base is hollowed out at irregular intervals by caves, some of which extend, as we were told, several hundred feet into the very heart of the mountains. The bay is between two and three hundred fathoms deep, but it is so open to the sea, and the anchorage is so bad, that it is one of the worst places which a vessel could select in a storm. The waves break with terrible force on the rocks, throwing their spray far up the bleak mountain sides, and the wind sweeps with relentless fury on the ill-fated vessel that may be caught here on a lee shore. But Valentia Bay is more protected, and although not safe in a storm, affords much better anchorage. The land for miles into the interior is very rocky and barren, and affords a poor pasturage for the diminutive but hardy race of cattle for which the County of Kerry is famous. It is a difficult matter to distinguish the huts of the peasantry on the great hillsides; but here and there can be seen the ruins of churches, which were built by pious Christians of the fifth and sixth centuries, and whose walls have long since crumbled into decay. This Island of Valentia suffered fearfully during the famine in Ireland, and hundreds died of starvation on the roadside or in the miserable dwellings, some of which still remain, and in which their bodies were found many weeks after their death, unburied. Within the last few years it is said the condition of the people has considerably improved, but if what I saw is called improvement, they must have been in a terrible state before the process of amelioration commenced. Some of them live at present by fishing, some by cultivating the ungrateful soil, and some by quarrying slate from the hillsides. About three miles from the head of Valentia Bay is the village of Caherciveen, and at the same distance from where our ship now lies is Knightstown, a small village of one thousand inhabitants, called after the Knight of Kerry, a gentleman who has been one of the strongest advocates of the Atlantic Telegraph. From the deck of our ship we could see a small sandy cove, which was selected as the place for the landing of the shore end of the cable, and a hundred yards from which a temporary tent was erected for the batteries and other telegraph instruments. In front of it was displayed an attempt at the stars and stripes, but it was only an attempt, and it would require one of the most shrewd guessing Yankees that ever lived in or came out of Connecticut to tell what it was intended for. It was soon replaced by



VALENTIA BAY, THE EASTERN TERMINUS OF THE ATLANTIC TELEGRAPH.

another, of a more unmistakable kind, however, and that ought to be sufficient to satisfy the most exacting patriot.

Although it was certain that we could not take the shore end of the cable out, yet it was concluded to employ our spare time in trying another experiment with a part of the 1,250 miles of the deep sea line which made up our half of the Atlantic telegraph, and which was free from defects. The Willing Mind, a steamer which came round from Cork as an additional tender to the Advice, took the end of this on board, and securing it firmly, started off from the Niagara at a speed of about four miles an hour, and when about five or six hundred yards from her the brakes were put on. The little steamer tugged and pulled away, but the wheels refused to turn while the brakes remained as they were, and after tugging and pulling for about five minutes the cable parted, having given way at last to a dragging force equal to a weight of three tons and a half. This was regarded as very satisfactory, but there is one thing which I think it proves—that the brakes could not be brought to bear upon the cable with such an immense mass as the Niagara hauling on it. The only plan was to let it run free, and if a kink should occur, to take the chances rather than put on the brakes, which appeared to be certain destruction.

We arrived and anchored in Valentia Bay on the evening of the 4th, but at too late an hour to commence operations other than described. The work of landing the shore part of the cable was deferred therefore until the following morning at eight o'clock. At the appointed time every thing was prepared for the work, the Willing Mind came under our stern ready to tow the heavy shore line, and in addition to this there were some half dozen boats from the Susquehanna and Leopard, with two or three from the Niagara, all prepared to assist in the work. The engineers, however, before beginning, at once decided on testing both the shore cable and machinery, and for that purpose got the Willing Mind to tow out some five or six hundred yards. This preliminary operation was attended with such success that it was determined to commence work without further delay. Two of the launches of the Leopard and one from the Susquehanna were brought under the stern of the Niagara, and about a mile and three-quarters of the cable coiled upon them; then another mile or three-quarters was put on board the Willing Mind, and the whole four towed by the Advice, went off in procession towards the point indicated as the landing place by the American flag, already alluded to. On the shore there were about two thousand persons, the whole population of the place, and large contributions from miles around, waiting there from seven in the morning till seven in the evening for the arrival of the fleet of cable boats, whose progress they had watched with so much anxiety and impatience. It was five o'clock when we started; never before was such a scene presented in Valentia Bay, and the poorest spectator there, though he could not tell what strange agency it was that lay in that cable, understood what it was intended to effect, and his face beamed with joy as he heard his comrades say that it brought them nearer to that great land that had so generously stretched out the helping hand to their starving countrymen, and that had given a shelter and a home to those who had found neither the one nor the other in the land of their birth. It was a happy day for them, and when later in the evening that cable was landed, and it was proposed to give three cheers for America, there were none there who responded with more sincerity and honest enthusiasm than the poor peasantry.

It took about two hours to land the cable, but the shallowness of the water prevented the Advice from running close to the shore. The passengers, therefore, consisting of a number of friends of the enterprise, got into one of the small boats, and rowed in as near as they could, but still not near enough for us to get ashore without wetting our feet. We were not long left in doubt, however, as to what we should do, for we had hardly run our boat aground before there was a whole crowd of men in the water, regardless of wet clothes, proffering their assistance, and offering as many backs as there were passengers in the boat. It was one of the incidents of the great scene which was being enacted, and occasioned considerable merriment among the bystanders. Here a little fellow presented himself to a gentleman of the most portly dimensions, and insisted upon his ability to take him ashore. It was no use, however, for had he the strength of Atlas he could not have persuaded the passenger that he was able to carry him, and so he had to call another to his help, when both of them succeeded in landing him safely, to his great satisfaction and relief. These two performed the job so well, that the rest of the passengers at once entered into a contract with them, and were landed high and dry upon the beach. About half an hour after we got ashore the small fleet of cable boats were observed rapidly approaching, headed by one bearing the united unions of England and the States —that is, the Union Jack and the Stars alone on a blue ground, while the words "Atlantic Telegraph" were inscribed upon it in large letters.

Among those on shore were the Lord Lieutenant of Ireland, (Lord Morpeth, of anti-slavery proclivities,) Lord Hillsborough, the Knight of Kerry, and nearly all the gentlemen connected with the enterprise. But here comes the cable in the hands of the crew of the Niagara's boat, who rush up the beach with it dripping with water, for in their haste to carry it ashore they have to wade knee deep. Mr. Cyrus W.

Field is there beside Lord Morpeth, or, as he is now called, Lord Carlisle, and as Captain Pennock comes up in advance of his men with the cable he introduces him. There is no time for the passage of formalities, and the introduction and meeting are therefore free from them.

"I am most happy to see you, Captain," says Lord Morpeth; and the Captain most appropriately replies:

"This, sir, is the betrothal of England and America; and I hope in twenty days the marriage will be consummated."

The crowd now press around, all eagerness to help in pulling up the cable, and when the work is through, those who have been fortunate enough to put their hands to it show the marks of the tar to those who have failed in the attempt, as a proof of their success. By dint of pulling and hauling, they get it into the trench in which it is to be laid, and take up the end to the top of a little hill, where they secure it by rolling it around a number of strong stakes driven fast into the earth, and placed in the form of a circle. This is the centre of the site marked out for a house, in which the batteries and instruments are to be placed, and which was used as a temporary station till a better and more substantial one could be erected. When the cable was placed here, and the enthusiasm of the people had somewhat subsided, the rector of the parish made an appropriate prayer.

At the close of the prayer, Lord Carlisle addressed the people as follows:

"My American, Irish, and English friends, I feel at such a moment as this that no language can be becoming, except that of prayer and praise. However, it is always allowable to any human lips, though they have not been specially qualified for the office, to raise the ascription of 'Glory to God on earth, peace, good-will to men.' That, I believe, is the spirit in which this great work has been undertaken; and it is this reflection which encourages me to feel the strongest hopes of its final success. (Hear, hear.) I believe the great undertaking, now so happily begun, will accomplish many great and noble purposes of trade, of national policy, and of empire; but there is only one view in which I will now present it to those whom I have the pleasure to address. You are aware—you must know, some of you, from your own experience, that many of your dear friends and only relations have left their native land to receive hospitable shelter in America. (Applause.) Well, then, I don't expect you can all understand the wondrous mechanism by which this great undertaking is to be carried on, but this I think you will all of you understand. If you wish to communicate some piece of intelligence straightway to your relations across the wide world of waters—if you wish to tell those whom you know it would interest in their heart of hearts, of a marriage, a birth, or a death among you, this little cord which we have piled up on the shore will impart those tidings quicker than the flash of the lightnings. (Applause.) Let us now hope, let us now pray, that the hopes of those who have set in operation this great design may be rewarded by its entire success, and let us hope further that this Atlantic cable will, in all future time, serve as an emblem of that strong cord of love which, I trust, will always unite the British Islands and the great continent of America, and join with me in my fervent wish that the great Giver of all good, who has enabled all his servants to discern so much of the workings of those mighty laws by which he governs the universe, will further this wonderful work, and will further so bless its operation, as to make it serve the high purposes of the good of man and his own great glory. (Hear, hear.) And now, my friends, as there can be no project or undertaking which ought not to receive the approbation and applause of the people, let all join with me in giving three hearty cheers."

Three cheers were given with a will; but it was not enough, and they cheered and cheered until they were obliged to give up from exhaustion. "Three cheers," said Lord Carlisle, "are not enough—they are what they give on common occasions. Now, for the success of the Atlantic cable, I must have at least one dozen." The crowd responded with the full number, and then cheered the following:

"The Lord Lieutenant of Ireland."

"The United States of America."

"Mr. Cyrus W. Field."

Mr. Field, in reply, spoke as follows: "Ladies and gentlemen—words cannot express to you the feelings within this heart. It beats with affection towards every man, woman and child that hears me; and if ever on the other side of the water one of you present yourselves at my door, and say you had a hand in this, I promise you a true American welcome. (Cheers.) 'What God hath joined together let no man put asunder.'" (Cheers.)

And more cheers were given for the following:

"For the sailors."

"For Yankee Doodle."

"For the officers and sailors on board the ships that are intended to lay the cable."

"The Queen."

"The President of the United States."

"The American Navy."

Captain Wainwright, of the Leopard, returned his thanks on the part of the officers of the squadron, and said that there was not a man who would not be ready to make almost any sacrifice to promote the success of this undertaking.

This closed the great ceremony of landing the first Atlantic submarine cable, and if we had been as successful in taking it ashore at Newfoundland, we certainly would have had reason for congratulation and rejoicing. On our return to the wardroom of the Niagara, we had a pleasant social gathering of all the officers, at which Lieut. Boyd brought out an immense cake, with which we celebrated the event.

THE LAYING OF THE CABLE FROM VALENTIA BAY.

THE FIRST DAY—AUGUST 6.

The landing of the shore cable in Doulus Bay was successfully accomplished, as has been stated, on the evening of the 6th of August, a day which will be ever memorable in the minds of all who were present on the occasion. To the people of that part of Ireland it was an event of the most absorbing interest; and although there were many there to whom the scientific character of the work was an inexplicable mystery, it was, as we have said, enough for them to know that it brought them nearer to that great nation where myriads of their countrymen had found a home, and where by honest industry they were enabled to obtain an independent livelihood. Never before had such a mass of people assembled on the shores of that bay, and never did people regard any spectacle with deeper interest. They came from miles around—from their huts on the steep hill sides and the dark mountain passes, from the storied scenes of Killarney in the interior, and the bleak-iron bound coast for which the south as well as the north of Ireland is so celebrated. It was a great day for all—from the Lord Lieutenant down to the poorest man who quarried slate for eight pence or a shilling a day, on the side of the hill that overlooks the harbor of Valentia. From seven in the morning till seven in the evening they awaited with impatient eagerness the landing of the cable; and when the boats which bore it to the beach were within a hundred feet of the place designated, they could with difficulty be restrained by the police from rushing into the water and pulling it ashore. People may talk about the popular enthusiasm which is manifested at coronations, the visits of monarchs, and all that, but he must indeed have been a great monarch who was received with such heartfelt welcome as the crowd gave to that electric chain. The moment the cable boats touched the shore, the people, animated by one impulse, ran forward, and the guardians of the public peace, unable to restrain their eagerness, were swept aside by the rush. A hundred hands seized the cable, and running up the elevated ground which fronts the bay, landed it about fifty feet above the water mark. Then followed the scene which has been already described, a scene of the wildest enthusiasm, in which the name of America was hailed with cheers that made the mountains ring. They never tired of cheering, and the man who proposed "three more for Yankee Doodle," when each voice was hoarse from the extraordinary duty it was called upon to perform, was answered with a deafening hurrah, that was repeated again and again, till the crowd could almost cheer no more from sheer exhaustion.

That night there was a grand ball at the little village of Knightstown, and the day dawn caught the merry-makers still engaged in their festivities. A bonfire of peat, piled up as high as a good-sized two-story house, sent its ruddy and cheerful light far out into the darkness, brightening up the black crevices in the frowning rocks, and throwing a glow on the faces of the light-hearted peasantry that gathered around it in a huge circle. There was a fiddler among them, and though his music was not quite so scientific as Paganini's, and he would occasionally throw in a few dubious notes of his own by way of improvement on the composer, yet to that crowd it was as acceptable as the best that cultivated ear ever listened to, or that was ever applauded by kid-gloved hands at the Academy of Music. "The wee sma' hours ayont the twal" were fast passing away when they dispersed to their several homes, but the bright fire kept it up still longer, and had a terrible battle with the daylight before it was subdued. The bright red glow which but a few hours before illuminated and made cheerful every thing it touched, became paler and paler, till it was lost in the still brighter light of day, and before night, there was nothing left but a mound of white smouldering ashes, beneath which the fire gradually expired. The following morning, about four o'clock, the author was making his way in a small boat from the Niagara up to the scene of the festivities of the evening before, with his last letter for friends at home, but he found the little village of Knightstown sound asleep, and even the owner of the inn, which in this part of the country rises into the dignity of a hotel, was as oblivious as ever wearied and worn-out traveller could desire to be.

It may be as well to state here, lest the reader should mistake the object of the visit, that the innkeeper was also the postmaster of the village, and that, in his official capacity, he was a great man in Knightstown. On this occasion, he seemed to be somewhat put out by being roused from his slumbers at such an early hour; but when he learned that it was a visitor from the Niagara, his door was thrown wide open, and the letters, having received the postage stamps, were dropped through the little crevice in the huge slate that stands like a door in front of the Knightstown Hotel. Feeling considerably relieved, the writer returned to the Niagara, which was to have started at five o'clock that morning, and which, when he had cleared the harbor of Valentia, he saw standing out to sea at the rate of two miles an hour, with her bow turned westward. The cable was over her stern, and the process of paying out appeared to be progressing with perfect success; when she commenced suddenly blowing off steam, and her stoppage soon after gave evidence that there was something wrong on board. In a few minutes more the cause was explained.

In paying out, the cable slipped off the wheel, through the want of proper caution on the part of one of the men who had charge of it at this point, was caught between the wheel and the journal, and became wedged so tight that it was impossible to extricate it in time. The motion of the vessel was arrested in a few moments, but it was too late; the strain was more than the cable, strong as it was, could bear, and in less than five minutes from the time it was caught in the machinery it parted in the water, leaving the loose part swinging over the stern. As may well be supposed, this was a most trying time; but as every hour lost only made the difficulty worse, preparations were immediately made for the recovery of the broken end, which lay on the bottom at a depth of between thirty and forty fathoms, and at a distance of about four miles from the point where it had been landed the evening before amid such enthusiastic rejoicings. Mr. Woodhouse, Mr. Canning, and Captain Kell, started off the Niagara; and by the aid of two paddle-box boats from the Leopard, one from the Susquehanna, and the little steam-tug the Willing Mind, they accomplished the tedious and difficult task of under-running the cable from the shore to the place where it had parted, and where they took up the end for the purpose of making a splice. Unfortunately the roughness of the sea prevented this, and after several ineffectual attempts they were obliged to give it up till the following day, when it was hoped the elements would prove more favorable. Accordingly our ship's head was turned once more towards Valentia, and in less than an hour she was anchored in the bay. That night it was arranged that the cable should be again underrun from the shore, and spliced under the shelter of the headland which protects the entrance on the left of the bay. This was to be done as early as possible on the following morning.

Up to this time we had met with nothing but reverses, and the prospect, to say the least of it, did not appear very promising. We had lost a day by this accident, and any further delays might cause the postponement of the enterprise till the following year. All felt, therefore, that not an hour could be spared, and that every minute should be carefully economized if we expected to succeed at all. There were many anxious minds on board the Niagara that night, and many an inquiring look was taken at the barometer, which had shown some indications of an unfavorable change in the weather; but about 12 o'clock the wind moderated and the barometer again rose.

For three-quarters of an hour only was the electric connection complete, and during that time some signals and a few messages were transmitted through the cable. The test, so far as the continuity was concerned, was as perfect as could be desired, but it must be observed that the current did not pass through the whole wire, but only through one hundred and forty miles, consisting of the coil of the shore cable and the spar-deck coil of the deep sea line. It is proper to state here that the paying out of the shore cable, which is an inch and a-half in diameter, and weighs about eight tons to the mile, was a rather difficult operation, and attended with considerable risk. While the deep sea line is remarkable for its great flexibility, this portion of the cable is as much the reverse as it is possible to conceive. It was made with the view of resisting all the strain to which it might be subjected by the fouling of anchors or otherwise, and the wires of which the outer covering or protection was composed are each about one-eighth of an inch in diameter. While, therefore, great strength was obtained, it was impossible at the same time to have the additional advantage of great flexibility, and the consequence was, that when it came to be wound round the wheels for the purpose of paying out, it could not be made to run clear into the sheaves, but was constantly bulging out somewhere, requiring unremitting care and attention on the part of the workmen to prevent it from running off altogether. It was through the neglect of one of these, as has been stated, that it really did run off, and that it became necessary to splice it a second time. How much we longed to see the last yard of it overboard and the process of paying out the deep sea line commence! We felt confident, from its pliability, that there would be little or no difficulty experienced in its manipulation; that on this account particularly there would be no danger of its running off the sheaves, and thought that the power of the brakes could be so nicely graduated as to bring little if any strain upon it. Had we it once safely down, we were confident that, if favored with fair weather, we would be able to pay out our twelve hundred and fifty miles successfully.

The Second Day—August 7.

This was in reality the third day on which the work of laying the cable was continued, but as the mere landing of the shore portion of it cannot fairly be entered to the account of paying it out, it should more properly be called the second. It is, therefore, in this order that it is recorded, and it is for this reason that the mere process of landing is not included in the regular minutes of the expedition, which may be said to have commenced only when the ship herself was under way and paying out the cable over her stern. After all, however, this may be regarded as an immaterial point, although it may be well to state it in this connection, if for nothing else than the sake of accuracy.

The work was commenced about half-past five o'clock in the morning, when the Willing Mind, which played such a conspicuous part in nearly all the preliminary operations in and about this place, proceeded, with a number of workmen on board, to the buoy which marked the spot where the cable lay. She was accompanied by two boats from the Leopard and Susquehanna, each of which had a strong force to assist whenever they might be required. For three or four hours, during which they worked with might and main, they endeavored to raise it, but finding it impossible to accomplish their purpose within any reasonable time, they concluded to underrun it once more from the shore. About an hour was taken to do this, and the only thing that now remained to be done was to splice the end on board the Niagara with that which had been recovered. The Willing Mind started once more for our ship, taking one end with her to the boats of the Susquehanna and Leopard, which were lying under the lee of the land, and where the work of splicing could be carried on with less risk and greater despatch. We could see them from the deck of the Niagara working hard and fast, and during the two or three hours they were employed in this way they were objects of the most eager curiosity. The splicers were surrounded by a portion of the crew of both boats, and were almost concealed from our view, so that we had no chance of seeing what was going on. At last, after three of what appeared the longest hours, the Willing Mind and the other boats parted company, the latter returning to their separate ships. This was proof positive that the cable had not only been spliced, but that the spliced portion had been laid. By seven o'clock the anchor was up, and we were once more under way, paying out as if nothing had occurred to interrupt our progress. For the first five or ten minutes the machinery did not run as well as could be wished, and a thumping sound, that excited the most unpleasant sensation, was made by its passage over the wheels. But the ear soon became accustomed to this, and so long as it passed safely into the water every one was satisfied. The coil from which it was paid out was in the forepart of the ship, within a few feet of the forecastle, and as the distance from that to the stern was nearly her whole length, a number of men were stationed at intervals, like sentinels, between the two points, to see that every foot of it reached its destination in safety. Every thing that could be done was done to give it a safe and easy passage, but it still continued to thump away at the machinery, and before the last part of it left the ship, it created such an excitement on board that all we had previously gone through in that line seemed trifling in comparison. The part where the shore cable is joined to the deep sea line gave way as it was passing over one of the wheels, and in a minute more the broken portion would have been out over the stern, and lost beyond all hope of recovery, at least in time to permit of the seasonable prosecution of the work that year.

This was the most critical moment of the enterprise. The provision which was made for such an emergency saved it, and the admirable management of the ship, by which the strain was taken off it during the process of splicing, is worthy of all praise. The captain had ordered a strong hawser, of sufficient length, to be placed near the stern of the vessel, where it could be used at any moment, and then awaited with no small degree of anxiety the time when it should be announced that they were ready to pay out that portion where the two cables were joined. At last it was reached, and the speed of the vessel having been reduced to a fraction of a mile, so that she could only be said to be moving through the water, it was passed through the hands of the men as carefully as if it were the most tender fabric in the world, and had just gone over one of the wheels, when it was observed giving way at the joint. The men in charge were at once on the alert, and in a moment had it firmly secured to the hawser. Mr. Everett, the chief engineer of the ship, seemed ubiquitous, and rendered most efficient service at this part of the enterprise. With a coolness and self-possession deserving of all praise, he observed every thing that was going on around him, and was ready for every emergency. His conduct on this occasion pointed him out as the proper man to take charge of the cable on the next expedition; and Mr. Field never showed his foresight and judgment to better advantage than when he mentioned Mr. Everett to the Telegraph Company as the engineer who should construct the paying-out machinery. The accident occurred at half-past eleven, and the ship was about seven miles from the point from which she started that afternoon. The other vessels of course could not have been aware of its exact nature, but they must have known from the stoppage of the ship that there was something wrong. Whatever may have been their anxiety during the long and weary hour and a half which it took to renew the splice, it certainly did not exceed what we felt during that time. Not a word was spoken except by those in command, and the orders were promptly and quietly obeyed. Those who could take no active part in the work, looked on with something of the feeling with which a man awaits the result of a chance on which his very life may depend. Many an inquiring look was directed to that portion of the cable that hung over the stern, and at the men who were employed at the work of splicing. It seemed as if it would never be finished, although the joiners went at it with a will, knowing how much depended on their expedition, and performed it in half the time that would be given to it under other circumstances. The hemp serving and gutta percha insulation were cut off, leaving both ends of the copper wire or conductor perfectly bare. This was done in almost less time than it takes to relate the circumstance. The two conductors were then laid together, bound up with a single wire, and the whole soldered together. After this the gutta percha was placed over the conductor in a perfectly plastic state, and the insulation having been thus effected, the hempen strands were served upon it, the iron protecting wire or external armor placed over that again, and the whole securely bound with strong hemp. Having been spliced in this way, it was lowered down cautiously over the stern by the same hawser, so that there was little or no strain brought upon it, and in less than half an hour more the ship was on her course, going at a rate of from two to three miles an hour.

Many an impatient look is directed toward the splicer, but he performs his duty well; he is working with all possible dispatch, and although we wish he were quicker, he is doing all a man can do; if the cable be lost, it will certainly be through no fault of his. In the midst of the subdued excitement—for as I have said, no one attempted to speak but in whispers, except those in command—we could not but think, when we looked out upon the calm sea as it sparkled under the bright light of the full moon, with a feeling of gratitude upon the auspicious weather with which our enterprise had been blessed thus far. Never was a vessel more favored than ours, and if we are only permitted to lay this cable, what a time of rejoicing we will have when we get back to New York. It is almost too much to hope, and as we think what we have yet to go through, our sensations become painful in the extreme. Let us, when we return to the Empire City, be able to tell our friends that the cable is laid, and the United States, big as they are, will not be able to hold us.

Let us lay this cable successfully and we will—but it is useless saying what we will do. After all our anxiety, after all the excitement, it may be that we are not destined to accomplish our great work this time, but our hopes are strong, and I know that there is not a man on board, from the captain to the humblest hand, that is not wrapt up heart and soul in the enterprise. So strong is the feeling, that I believe there would be less excitement among them at the cry of "man overboard" than there would at the announcement that the cable had parted, perhaps it is because they think the man might be picked up, but that the cable never could.

The cable meantime has been paid out, and in less than an hour we are at least two miles off from where the splice, which had put every one into such a terrible state of anxiety, is lying safely upon its ocean bed. We are glad to get rid of it, for it was one of the worst customers with which we had yet to deal, and every body congratulates every body else that it is safely overboard. "I tell you what," says one of the quartermasters, two or three hours after; "I tell you what, that was a hard tug, and I hope we won't soon have such another"—a hope in which it is almost needless to say every one who heard him joined.

The next point of interest now is the telegraph office, the door of which is beset with eager inquirers, all desirous of knowing how the cable works, and a considerable number of these with messages for friends not only in Valentia, Liverpool and London, but away off in the United States. Among these was the writer, who took advantage of the first opportunity to transmit the following despatch to the New York Herald, and which he feels considerable pride in being able to say was the first sent to any newspaper over the Atlantic Telegraph, or that portion of it which was laid. And here it is:

UNITED STATES FRIGATE NIAGARA,
At Sea, off the Coast of Ireland, August 8—1 P. M.

TO JAMES GORDON BENNETT, ESQ., New York *Herald Office.*

The cable is being paid out over the stern in capital style, and the ship is going at the rate of two miles an hour. We have just paid out the twelfth mile most successfully, and are getting on admirably. The insulation was found to be perfect after a splice had been paid out, and the cable is in such excellent working order that messages are transmitted between the ship and the shore with the greatest ease. All are well on board the Niagara, and sanguine as to the result of the expedition. We can see the lights of the other steamers as they hover around us, and can imagine what intense anxiety they must feel to know how we are getting on. J. M.

The subjoined despatch was received from the telegraph office at Valentia Bay:

We see the Niagara broadside on. Is there any thing wrong in the paying out?

To which the following reply was received:

All is right. Every thing is going on well. The ship's broadside being on arises from her drifting, as she was going very slowly—only a mile and a half an hour.

The messages that were sent by the officers to their friends and relatives in different parts of the United States would fill nearly a volume, and the operatives were kept busy at the instrument the whole time.

Third Day—August 8.

Since the Niagara left New York, she was not and could not have been favored with fairer weather than she had to-day. The sun rose in an almost cloudless sky, and the wind was so light that it hardly raised a ripple on the water. The rest of the telegraph squadron had spread a part of their canvas in the hope of being able to save their coal; but they made nothing by it, and were obliged to furl their sails which were hanging loosely from the yards. Even the light ensigns hung from the peaks in folds, and there was hardly strength enough in the breeze to shake out the still lighter streamers that floated from the main. We heard the bells of the Susquehanna as she stood off about half a mile on our starboard quarter, and, were it necessary, could have hailed her at that distance without any great straining of lungs. The Leopard was taking it easy away off four or five hundred yards on the port side, and the Agamemnon, with her massive and warlike-looking hull, although a mile and a half away, loomed up as visibly as if she were not more than one-third that distance off. The Cyclops amused herself running ahead of the rest of the squadron, as if on the look-out for something which she never succeeded in finding. She had a jolly, rollicking way of her own, that contrasted strongly with the rolling gait of the bluff Agamemnon and the dashing style of the Leopard, which pitched into every sea, no matter how small, as if it had some insidious designs upon her, throwing it from her in showers of spray. The Susquehanna took it quietly enough, and seemed as perfectly satisfied at going two miles an hour as if she had been going a dozen in the same time. About twenty miles astern of the squadron the Skelligs, two high rocks that stand out from the main land like gigantic outposts, were distinctly visible, and although the little light-house at the entrance to Valentia harbor had sunk below the horizon some hours before, we could still tell its position by the high landmarks by which it was surrounded. There were the Blasketts, an island mountain, and one of the first of the many highlands which the mariner sees on this part of the Irish coast before he enters Dingle bay; and those low, half-sunken, treacherous-looking rocks, with which the waves are at perpetual war, are the Foze, and are the dread of all the shipmasters who trade about this part of the island. Away off beyond the Foze and the Blasketts, among those highlands of the county Kerry, is some of the most magnificent scenery that ever delighted the eyes of a traveller; and as those highlands sink gradually below the horizon, the valleys darken with the evening shadows, and the mountain peaks, suffused with the red glow of the descending sun, look more like the creations of dreamland than a living, actual reality.

It is Captain Pennock's watch to-day, although Captain Hudson may be said to be always on, with the exception of the few hours which he gives to rest. The Captain's first question is in regard to the cable, as it is in fact the first with almost every one when they have got the sleep out of their eyes.

"What is the rate at which the cable is being paid out?" he inquires, addressing Mr. Fugitt, the sailmaker, who is one of the guardians of the coils.

"Three miles, sir," is the response. This is not so fast as had been expected, but it is doing very well for the present, although the intention is to do much better before a hundred miles of the cable shall have been passed over the stern. A visit to the coil proves that the report of Mr. Fugitt is correct, and also proves another thing, that whatever fears might have been felt in regard to kinks, or any thing of that kind, are entirely groundless. Nothing could be more gratifying than the way in which it comes up out of the coil—so flexible, and yet possessing so much strength. There is no trouble whatever with it—no twisting into knots nor entangling of the flakes—but the whole process of uncoiling goes on without the slightest difficulty. The men who stand around the circle looking out for accidents have an easy time of it, and might be in New York or Liverpool, or away in the Punjaub, for all their services are required That cable couldn't kink if it tried; and so long as it passes out of the ship safely, and is deposited securely on the bottom, it may twist as much as it pleases. The iron wires which form the outer covering or protection may become so corroded with the action of the salt water as to afford it no longer any protection; but while the insulation remains intact, the essential part of the cable requires no other protection than that given it by the gutta percha. It has been urged, as an argument in favor of the success of the Atlantic telegraph, that the iron wire, in the process of decomposition to which it would be subjected after its submersion, would enter into combination with the calcareous substances, which, as has been shown by the soundings of Lieut. Berryman and Capt. Dayman, form a part of the deposit of the bed of the ocean. Once the cable is down, however, and down securely, who cares whether it does or not, or whether there is not a particle of the protecting wire left?

The first coil will be all run out some time to-morrow (Sunday) morning, and then what a time there will be in passing the second splicing safely out of the ship, and how we shall rejoice at having even one-tenth part of our half laid! Various speculations are afloat as to the length submerged and the distance run; and when it is announced from some quarter or another that the twenty-five hundred miles aboard both ships will fall short before the Agamemnon reaches the Newfoundland terminus, a rather uneasy feeling takes possession of some, although the engineers express their confidence that two or three days' reckoning will show there is not only enough, but plenty to spare. The only thing that remained now to be done was to get rid of the cable as fast as we could, for although we might have been satisfied with three miles when we started, now that we had attained that, we would not be content till we reached four or five. The only objection to this was that it might bring too great a strain upon it, and that in our impatience to get through with our part of the work we might lose the cable—a catastrophe, the very dread of which haunted us like a nightmare. True, the strain at the present rate, as appeared from the indicator, did not exceed four hundred pounds, while the cable, as had been proved by the experiment in Valentia Bay, was capable of bearing a strain of three and a half tons.

It has just been proved from a calculation of the distance run and the amount of the cable paid out, that there is at present no reason to fear we shall not have enough. The ship is thirty-nine miles from the point at which the shore end of the cable was landed, while the number laid does not exceed forty-one, showing that only two miles more than the actual distance traversed have been expended, and that if they continue at this rate they will have sufficient with which to lay a submarine telegraph line from Cape Race, Newfoundland, to Cape North, the most northern part of Cape Breton. But all this is premature. When we reach mid-ocean, if ever we succeed in getting so far, we will be better able to tell.

This day closed with fine weather, and a promise of its continuance. In the evening, about seven or eight o'clock, the remarkable color of the sea attracted general attention. But only a few hours previous it had a deep blue, but it was now a very light pea green, and, looking closely at the surface, we discovered that it was strewed with dead medusæ. For miles and miles we passed through these, and would doubtless have continued to see them had we not been prevented by the darkness of night. Another visit to the coil and the telegraph office before going to bed, satisfied us that the cable was going out in fine style, and that the continuity was perfect. That word "continuity" had become quite a pet on board; and if any thing went wrong with the cable, the first question was always of course in regard to its safety, and the next as to the continuity being all right. Once at ease on both these points every one slept more soundly, but the moment the slightest breath was whispered of any thing wrong with either, the greatest anxiety was manifested till the cheering intelligence was given that the work was going on successfully. If the "old coffee-mill" stopped for a minute, all hands in the cabin and wardroom were on deck to know the cause of it, and did not go below again till it went on as before. The "coffee-mill" was the name given to the paying-out machine, from the peculiar noise made by the wheels, and which bore somewhat of a resemblance to that which would be produced by a mill for grinding coffee. The sound became as familiar to us as that of our own voices, and so long as we heard it, we knew that every thing was safe—that is, that the cable, which was every thing to us, was going out without difficulty. The first thing we heard in the morning was the paying-out machine grinding away above our heads, and although it made what some might consider a disagreeable racket, to us it was more pleasing than the best opera ever produced by Italian, German, or any other composer. This night, particularly, it seems more noisy than ever, but instead of interfering with our rest, it will only make us sleep the sounder.

Fourth Day—August 9.

The now familiar sound of the paying-out machine, which never ceases except when there is something wrong with the cable, kept on through the whole night without interruption, and was the first thing that greeted our waking senses. We were doing wonders, and so long as the brakes were not applied, the machine showed no sign of halting in its work. At our mess table it was the principal subject of conversation, and all were of the opinion that the laying of a cable across the Atlantic was not only feasible, but that it would be accomplished in this present month of August, and by the ships Niagara and Agamemnon. There were some, it is true, who thought that there might be a difficulty when we came to the great depths, and that the increased weight and strain which would then be brought upon the cable, with the pitching and rolling of the ship in a heavy sea, might be more than it could bear; but after all, there was little danger to be apprehended from this, if the brakes were not put on, for it was observed that when they were employed for the purpose of checking its speed, they very frequently stopped the wheels from turning, and brought upon it the strain produced by the speed of the vessel—a strain which would part the strongest cable ever made, as it parted the shore cable but a few days ago, and only a short time after we got out of Doulus Bay. Those brakes, in fact, are the only things that we have to dread; and if they were once overboard, there is no difficulty, so far as our experience has yet proved, in the way of the successful accomplishment of this enterprise.

We are in high humor at the progress we have already made, as well as the fine weather we have had, and being on the second coil of the deep sea line which was put on the berth deck, are now looking forward to the time when we shall get rid of that too. The coil which had been formed on the spar deck, and the last mile of which was paid out at a quarter to 8 o'clock this morning, contained one hundred and thirty miles, which, with the ten miles of heavy shore cable, made one hundred and forty, or about one-ninth of the whole amount on board. It was known last evening that if no accident occurred, we would reach the foremain deck coil some time this morning; and as the critical moment arrived, all who could were up on deck to see the splice by which the two were connected go over the stern. This moment was looked forward to with considerable interest and anxiety. It was thought that the strain produced by the machinery on the joint, which is certainly not so strong as the other parts of the cable, would be too much for it, and that it would give on being paid out. Every precaution was therefore taken to prevent such an occurrence. The speed of the ship was reduced to a mile an hour, and the spliced portion lowered gently from the stern. About thirty men were stationed about the coil and at the machinery, while a dozen stood near the stern, all ready for any emergency that might arise. Standing by the circle from which the cable was now going up with greatly diminished speed, we watched flake after flake and turn after turn as it was unwound from about the cone, until the last turn—the spliced part—was reached, and following it up to the machinery, saw it pass safely over the five wheels and down into the water. In a half hour more all danger was over; a few more revolutions were given to the propeller, and we were soon going at the rate of three miles an hour towards Trinity Bay, Newfoundland. This speed was increased to three and a half, and before night we were going at the rate of five, the highest we had reached yet. The rest of the squadron were somewhat astonished, for having graduated their speed by what we had been running, they began to fall astern very rapidly for two or three hours. They soon found out the cause, however, and putting on a little more steam, took their former position. The ease with which the cable was paid out at this rate convinced all of the practicability of continuing it with perfect success, and with such favorable weather as had attended the enterprise up to this time, of laying the cable inside of sixteen days. All that was necessary was to look out for the splices, to reduce the speed at the proper time, and especially to avoid the use of the brakes except when imperatively necessary. The accumulation of tar in the grooves or sheaves it was feared might have a tendency to throw the cable off the wheels, but as it was brushed away again by the cable almost as quick as it gathered, little attention was paid to it.

In the early part of the day divine service was celebrated, the captain performing the duties of chaplain. There was not, however, any interruption in the work; the men were at their stations as usual, and mingled with the captain's voice was the din of the machinery. At the close the prayer for the success of the expedition, which was read at the celebration of the landing of the cable, was repeated, and the earnest amen which followed, showed how deep an interest every one felt in it.

The greatest depth over which we had passed was four hundred fathoms, but to-morrow we expect to be paying the cable out into two thousand fathoms of water, or somewhat over two miles. This will test the practicability of laying it in great depths, and settle forever one of the most serious questions to which this enterprise has given rise. It is supposed by some, in opposition to the "telegraph plateau" theory of Lieut. Maury, that the bottom of the ocean, instead of being of one uniform level between Ireland and Newfoundland, has the same depressions and heights, the same abrupt declivities and mountain ranges, which are to be found upon the surface of the earth.

The soundings of Lieut. Berryman, of the United States navy, and Commander Dayman, of the British navy, have proved the existence of this plateau; but still it is urged that, as these soundings were taken at intervals of thirty, forty or fifty miles, it is impossible to tell the exact character of the bed of the sea from them, or to form any thing more than a speculative opinion in regard to the subject. The laying, therefore, of this cable will do much towards putting an end to all doubts whatever regarding it, as well as towards proving the practicability of the present enterprise. One of the great difficulties which Mr. Brett had to contend with in laying a cable across the Mediterranean, was caused by the great depth of water, which in parts equals the deepest soundings found on the telegraphic plateau, but those were abrupt and not gradual descents, like what we shall have. We will not be alarmed by any of those rapid runs of the cable that threaten destruction to all in its way, for the descents over which we shall pass will not be greater than one thousand feet to the mile, while the average will be perhaps about three hundred. This is certainly most promising, and if the promise holds good and the cable don't part, we may have an opportunity of realizing it to-morrow.

During the day we signalled the squadron that "all was right," which meant that the cable was going out safely, that the continuity was perfect, and, in a word, that we were getting along as well, if not better, than could be expected. They were satisfied, and during the remainder of the day kept on their westward course without interruption, while we pursued ours steadily, paying out the cable at the rate of from five to six miles per hour. The electricians said the cable was in good working order, and messages were sent through it to America by the officers of the Niagara to their friends and relatives, all of whom will doubtless have received them before we reach the other side of the Atlantic. There is evidently a determination not to let it remain idle for want of work, and the operators have enough to do if they get through the pile of manuscript which lies on their desk before morning.

Fifth Day—August 10.

There was a pretty heavy sea on during the whole of this day, and it was evident that there had been a gale somewhere in the immediate vicinity, judging from the size of the waves. The rate of paying out varied from four and a half to six knots an hour, and the cable came up from the coil as easily as if the ship were only making two knots. It is certainly a wonderful cable, and those coils are admirably adapted to the work. There was, it must be confessed, a prejudice against them at first, and when they were suggested as the best form that could be devised, some objected to them, on the ground that they would be so liable to kink. This opinion has now been proved to be erroneous, and those who opposed the circles are convinced by practical demonstration that they were the best that could be adopted.

This morning about ten o'clock a sail hove in sight, when the squadron, in addition to their own national colors, displayed the Telegraph flag. Our quartermaster, when she was some three or four miles off, proclaimed her to be "a Dutchman." In half an hour he took another observation of her; said he could see her colors, that she was Norwegian, adding, in a triumphant tone, that he knew "she was some kind of Dutch," but he guessed it was "pretty high up."

About eleven o'clock the Agamemnon signalled to us, desiring to know if we had any news, through the cable, from the East Indies, a part of the British dominions which at this particular time excites the most painful interest throughout England. We replied that we had not. There were, we understood, some on board who had relatives there, and who naturally felt anxious to hear about the condition of things in that country. At this time we were in 2,150 fathoms water, and the cable was going out in magnificent style. There were none of those sudden alarming runs which had been predicted for us when our ship should come to the great depths, and had we not known from the chart of the soundings where we were, we could not have told the difference, so far as its effect upon the line was concerned. We could partly tell the strain by the angle which it made with the water, while the speed at which it went out was marked upon an indicator connected with the machinery. The strain was shown more accurately by another indicator, so that we could tell the exact number of pounds it was subjected to at any particular time. This hardly exceeded three hundred, except when the brakes were put on, and then it was increased to fifteen and twenty hundred, and sometimes more. In all cases, however, it would not do to take the indicator as a true guide, as the pitching of the vessel produced a strain which is not always, if it is ever, correctly marked upon it.

There was a great deal of excitement created by the cable getting off the wheels twice this evening, but fortunately it was put on again without any other accident. It was to a considerable extent a repetition of the same scene that took place when the cable broke off the coast of Ireland. The ship was backed immediately, the cable released from the strain, and in five minutes, which seemed so many hours, it was put on the wheels again. When the order was given to the engineer to "go ahead slow," it is impossible to describe the scene which followed—the relief from a feeling of terrible suspense and painful excitement to which every one was wound up, the warm and hearty congratulations that were interchanged, and the eagerness with which we still continued to watch the wheels, fearful of a repetition of the accident. The engineers kept near the machine, ready in case of emergency to go over the work again; but fortunately there was no call for their services in the same way this night, after the second catastrophe.

The throwing of the cable off the wheels was caused by the accumulation of tar in the sheaves, which are not so deep and so wide as experience has proved they should have been. The tar, which is pressed out of the iron or protecting wire as the cable passes over the wheels, sticks in the sheaves until it gathers in some parts in large lumps, which become hardened by exposure to the air. The effect of this is to throw the cable off altogether, as occurred in the two cases just mentioned.

We had hardly recovered from the alarm created by these accidents, when the whole ship was thrown into another state of excitement by the report that the continuity was gone—that the cable refused any longer to transmit the electric current; in a word, that all communication between the ship and the shore had ceased, in consequence of some accident to the copper wire or conductor, of which no one knew the cause.

For two hours and a half the continuity was lost; and we believed that all was over, that the three hundred and odd miles which had been laid were laid in vain, that we would be obliged to return, and report our own failure, when the eyes of the whole world were turned upon us, and at a time, too, when we confidently hoped that success was within our reach if we only exercised a due amount of vigilance and caution. The Engineers, Captain Hudson and Professor Morse had all agreed that the only thing to be done was to cut the cable for the purpose of getting it off the paying-out machine, and transferring it to that which was to be used for winding up, and in regard to the successful operation of which there were very serious and well-founded doubts.

Mr. De Sauty, the assistant electrician, and Mr. Bright, consulted with Professor Morse as to the best course to be pursued, when he expressed the opinion that the strain to which the cable had been subjected at the time it slipped off the wheels had opened the gutta percha, and thus destroyed the insulation. This certainly seemed the only reasonable explanation that could be given of the affair, and the cause stated was generally accepted as the true one. About two miles of the cable had been paid out since that accident occurred, and the only question that now remained to be decided was whether the winding-in machine could be safely employed in under-running this length. This, as Professor Morse said, was for the chief engineer, Mr. Bright, to determine, and it rested with him to give the order to have the cable cut, in case he should so decide. Mr. Bright did so decide, and preparations were being made to carry his order into execution, when Mr. De Sauty informed Professor Morse that the continuity had been restored, and that the insulation had not been destroyed. In five minutes more the intelligence would have come too late, for in that time the cable would have been cut, and the conductor thus detached from the telegraph instrument could not have given any indication of its being perfect up to the terminus on the vessel. The glad news was soon circulated throughout the ship, and all felt as if they had been imbued with a new life. A rough, weather-beaten old sailor, who had assisted in coiling many a long mile of it on board the Niagara, and who was among the first to run to the telegraph office to have the news confirmed, said he would have given fifty dollars out of his pay to have saved that cable. "I have watched nearly every mile of it," he added, "as it came over the side, and I would have given fifty dollars, poor a man as I am, to have saved it, although I don't expect to make any thing by it when it is laid down." In his own simple way he expressed the feelings of every one on board, for all are as much interested in the success of the enterprise as the largest shareholder in the company. They talked of the cable as they would of a pet child, and never was child treated with deeper solicitude than that with which the cable is watched by them. You could see the tears standing in the eyes of some as they almost cried for joy, and told their messmates that it was all right. They did not know any thing about the scientific definition of the word "continuity," for to them it was a mystery which was incapable of explanation, but when they heard it was gone, they seemed to understand it as if by instinct, and to appreciate the full extent of the loss.

I have said that it was a great relief to all to learn that the electric connection was still perfect, but each man, as he retires for the night, has a feeling of nervousness and uncertainty, lest the morrow should have something still worse in store for us.

Sixth Day—August 11.

This has been a sad day. We had retired full of hope, not, it is true, unmixed with a sort of dread that there was something still worse than what had yet happened impending over the enterprise. This morning, about four o'clock, we were awakened out of our sleep to hear the cable had parted in over two thousand fathoms water. Five minutes after it had been announced every one was out of his bed to ascertain for himself if it was indeed true. There was, however, no reason to doubt, for there hung the broken end over the stern swinging loosely, and there were the wheels as motionless as a rock. The other end had not yet sunk to the bottom; it had to descend more than two miles before it reached the plateau, and it would require more time to accomplish that. The noise that sounded like pleasant music in our ears had ceased, and the machine which had caused us such anxiety had now become as so much useless lumber, blocking up the quarter deck. The cause of the calamity was the application of the brakes, at a time when it was fatal to use them. There was a pretty heavy swell on, and as usual under such circumstances, the stern of the vessel was elevated or depressed as she rose on each wave. It was while her stern was down that the brakes were put on, so that in addition to the strain produced by its rising again, the cable had to bear an additional strain of three thousand pounds, as marked upon the indicator. This was more than it could bear, and the consequence was that it parted. The moment the brakes were used the wheels stopped, and when the stern rose again they remained immovable, so that, between the strain brought upon the cable by the vessel and that caused by the application of the brakes, it had, as I have said, to bear more than it was ever calculated to sustain. The indicator showed a strain of three thousand pounds; but it is impossible to calculate the strain by which it was broken.

Had the brake not been applied, there is no doubt whatever that the cable would have remained perfect to the end, unless we were compelled by very great stress of weather to cut it. The circumstance, to say the least of it, was most unfortunate; but if the enterprise has failed, the expedition has proved one thing beyond all possibility of doubt, the practicability of laying a submarine telegraph cable across the Atlantic between Ireland and Newfoundland. Of this every man on board is as fully convinced as he is of his own existence, whether it be laid next year, or its accomplishment be postponed for fifty years to come.

The order to put on the brakes was given by Mr. Bright at this critical moment, and there is no doubt whatever on the mind of any one conversant with the facts, that it was that order that caused the fracture of the cable. The author, however, confidently believes that it was impossible to lay it successfully with that machinery, and that some such accident must have inevitably occurred before the arrival of the fleet at Newfoundland.

This morning, soon after the catastrophe, a consultation was held in the cabin of the Niagara, at which Captain Hudson, Captain Pennock, Captain Wainwright, Mr. Bright, Mr. Woodhouse, Mr. Canning, and Professor Morse were present, when the question of commencing the work over again with what cable remained on board both vessels was discussed, but as it was found, after due calculation, that there was not enough to connect the two points, the proposition of course did not prevail. The following table and statement show the amount paid out and the balance of cable on hand:—

	Statute miles.	Nautical miles.
Upper deck	130	111
Main deck	294	255
Lower deck	182	157
Lower hold	352	305
Wardroom	297	257
Total	1,255	1,085

This, with ten miles of shore cable, made a total of 1,095 nautical miles. Of this, 334 were paid out when the cable parted, leaving 759 miles on board the Niagara, which, with the half in the Agamemnon, left 1,847, or a surplus of 207 over 1,700 miles—the distance between the termini at Newfoundland and Ireland—an excess of 12 per cent. This was, as has been said, considered insufficient, and the proposition was accordingly rejected as impracticable. Indeed, it was deemed doubtful whether, if the cable had not parted, there would have been enough to reach Trinity Bay.

Another proposition was made, that when the vessels returned to England an additional length of cable be procured, and with this and new machinery the work be recommenced in October. This, however, was to be decided by the directors, and in the mean time it was understood that the Niagara was to lie at Plymouth until further orders. It was believed that if this proposition should not be carried out, our ship would be detained till the following year, when the Telegraph Squadron were to take a fresh start.

Soon after the meeting Mr. Field, with his usual promptitude, left the squadron in the Cyclops—the rest of the vessels, with the exception of the Leopard, remaining to make some experiments to test the practicability of splicing the ends of the cable from both the Niagara and Agamemnon. This occupied another day, and proved that it was perfectly practicable to join the ends of the cable in mid ocean.

BOUND FOR PLYMOUTH.

Having made the experiments suggested by Mr. Field, and which, as has been stated, were entirely successful, the Telegraph Squadron started for Plymouth, one of the first naval depots in Great Britain. On their way to that port a trial of speed took place between the Niagara, the Agamemnon, and the Susquehanna. Properly speaking it could hardly be called a race, for we were all so confident of the superior merits of our own vessel in point of speed, that we looked upon such a thing as competition or comparison as not only out of the question, but absolutely preposterous. True, we had heard a great deal of the qualities of the Agamemnon under sail and steam, and we certainly felt no inclination to depreciate her either as a sailing ship or a steamer; but at the same time the superiority which was claimed for her over our vessel we were not prepared to admit. We were told that she was the "crack" ship of the British fleet; that she could steam from twelve to fourteen knots an hour; and that she was, in a word, the fastest propeller on either side of the ocean; but all this we took with a certain degree of latitude, and while we listened to the relation of her wonderful performances, our opinion of the Niagara underwent no change. The fact is, as I have said, that we felt so confident of the superiority of the Niagara, as to regard such a thing as a trial of speed perfectly preposterous. There was then, literally speaking, no race between the two ships, for several reasons:—in the first place the vessels were not in proper trim or condition; in the second, we had only three boilers in operation, being deprived entirely of the use of our fourth by the proximity of the furnaces to the coils of cable, which might have been damaged by the heat of the fires; and in the third, we knew that the Agamemnon had frigates' masts instead of her own spars, which had been taken out the better to qualify her for the work of laying the great sea line. Yet I have no doubt that she made an effort to outrun us, if it be fair to judge from her increase of speed and the indications afforded by the dense columns of black smoke which occasionally issued from her pipes, that they were piling on the coal below. This is not all, however, for there was still stronger evidence in the frank acknowledgments of her men as to the great qualities of the Niagara, and the astonishment which they unfeignedly express at her speed and steadiness. And now let me state what it was that caused this change of opinion in men who were so full of praises of their own ship, and who, with a pardonable pride, believed she was superior to any other, although that other was the Niagara.

The day on which the cable was broken—that ill-fated 11th of August—some experiments were tried, all of which, as has been stated, proved successful. The following day, Wednesday, the 12th of August, we were on our way to Plymouth, and desiring to keep company with the Agamemnon, we kept under steam alone, while she was under both sail and steam. It was not, however, till the 13th, that what has been called the race between the two ships took place, and then the fact is, the Susquehanna was the only competitor we had. About 10 o'clock Captain Sands made the following signal to us:—"Going to Plymouth," intimating that he was bound for that port, and if we intended to keep company we had better "hurry up our cakes." We thoroughly understood the meaning of this signal to be a reflection upon the speed of our vessel, for on board of the Susquehanna they were rather inclined to depreciate her in this particular. They had been talking some time before about her failure, and in proof of it referred to the length of her passage from New York to England. It was upon this that they based their estimates of her qualities, and under the impression that their own was her superior, they gave us a challenge in this indirect way. At this time, that is, about 10 o'clock, the Susquehanna was a few hundred yards ahead of us, on our starboard bow, and as if to clear up any doubt we might have had in regard to the signal being a challenge, she slowed down until she was right abeam with our ship. In reply to the signal of Captain Sands, Captain Hudson made the following:—"We can only use two boilers, in consequence of cable."

Only two boilers were in use, but as a portion of the other two could be used without risk to the cable, we also got them under steam, so that three boilers may be said to have been in operation.

There was no doubt on the Susquehanna that they were certain of beating us, and although laboring under all the disadvantages already referred to, we were determined to lower their pride and punish them for their presumption. It must be remembered that we had the cable guard attached to our stern, that we were below our regular bearings with the cable, and that we had but three boilers in use; while the Susquehanna was in admirable condition, and there is no doubt was under a full head of steam when she dropped down and came abeam with the Niagara. As soon as she took that position, her wheels, which before this had being going at an ordinary rate, began to revolve with accelerated velocity, and finally with a rapidity that cleared up whatever doubts we might have had of her intentions. All the sails that were of any service were put on, and every evidence was given that she was doing her very best under the circumstances. Her rate of speed was about ten miles an hour.

All the steam that could with safety be used was raised, and we also made as much sail as was considered profitable. For twenty minutes or half-an-hour the Susquehanna occupied the same position, so that her gangways were within our line of vision during that time. We had not, however, got properly under way for the first fifteen or twenty minutes, but after this it became evident that the gangways were closing up—that is, they were falling below the line of vision, so that we could only see the gangway on the port side, or the side next to our ship. It was now apparent they were doing all in their power to maintain their position, but from this time the Susquehanna gradually began to fall astern, until her foremast was brought in a direct line with our mizen. In a few minutes more we were ahead of her, and an hour from the time she dropped down and came abeam with us she was about half-a-mile astern. Still she kept at it, although Captain Sands must have been pretty well satisfied regarding the comparative merits of both ships. From ten o'clock till four they kept it up, the Agamemnon doing her best also. At four, the Agamemnon was about twelve miles astern, and the Susquehanna about five. As we did not wish to run away from them altogether, and as Captain Hudson desired to keep company with the former, we hove too and let off steam till she came up. At twenty-five minutes past four the Susquehanna passed us, and at half-past-five the Agamemnon went by us under sail and steam. The race was over, and the Susquehanna displayed no more signals after this about going to Plymouth.

Notwithstanding all this the Agamemnon proved herself, with all the disadvantages under which she labored, and to which we were also subject, both a good steamer and a fast ship. She could hardly be expected to equal the Niagara in speed, for the two are constructed on very different models; and the only wonder is that any doubt could be entertained with regard to their qualities. Whatever may be said about her sailing and steaming abilities, the Agamemnon is one of the finest line-of-battle ships in the world; and it is no wonder that she is the pet of the British navy after her gallant performances before Sebastopol, when she distinguished herself by the fearlessness with which she steamed up to within eight or nine hundred yards of the frowning batteries of that terrible fortress.

The officers of the Susquehanna not only acknowledge that their ship was well beaten, but express their belief that the Niagara is one of the swiftest vessels in the world—that she is, in fact, without an equal. Since their conversion we have pardoned them for their presumption in thinking that they could beat us, and accept their voluntary praises of the Niagara as a proof of their sincerity. There is no doubt whatever that the long passage—a passage which was made under the most unfavorable circumstances—of our ship from New York to London in April, 1857, disappointed every one regarding her character as a steamer and sailing vessel; but those who knew her, and who have witnessed her performances under all circumstances, are satisfied that she will realize the high expectations that were formed of her.

ARRIVAL AT PLYMOUTH.

The Niagara arrived at Plymouth on the 13th of August, 1857, where she remained till the 5th of November following, when she sailed for New York. Mr. Field had arrived sometime before, and had called a meeting of the Board of Directors at London, at which Mr. Everett and the commanders of the expedition were present. The result of these meetings was, that Mr. Everett was requested to examine and report upon the form of machinery best adapted to secure the success of the next expedition.

While occupying this position, he was literally deluged with plans of proposed machines, suggestions in regard to the laying of the cable, and advice from every quarter as to the manner in which the work should be performed. Some of those correspondents offered their suggestions and advice without hope of pay, or at least without saying any thing about it, but it must be confessed that the majority were worldly minded and looked after the almighty dollar. Machines of the most remarkable structure were presented on paper for consideration, accompanied with detailed descriptions and explanations covering whole reams of foolscap. Take them all together they were rich specimens of literature, and should not be allowed to pass into that obscurity to which the efforts of aspiring genius are so often consigned. They were from clergymen, artists, mechanics, engineers, sailors, soldiers, officers, and gentlemen of leisure—that is, those who are supposed to have plenty of money, and plenty of time to spend it in. The following is one of the volunteer letters, and, as will be seen, the suggestions which it contains are the joint production of two parties, although, according to the laws of the church, they should properly be regarded as one:—

"I was talking to my wife in bed last night, whose brother was in the navy, as to depositing your Atlantic telegraph rope, when she suggested whether you would not have difficulties with the currents, which she had heard her late brother speak of as interfering with the soundings. It immediately struck me that you were beginning at the wrong end, and that the rope ought to start from the American side, so that the Gulf Stream might act on the concave, or inside of the curve of descending rope and facilitate its deposit, instead of acting on the convex side and tend to throw it down—it curves and renders a much longer length as necessary. If there be weight in this suggestion, and you begin at the American end, the course of your vessel should curve southward to allow for or compensate the northward tendency of the Gulf Stream. As you know the depths and the surface rates of the current, and its angle with the ship's course, you may guess the rates and the direction of the current at different depths, or average them, and thus get across with the shortest possible amount of rope, and therefore in the straightest line. If these suggestions reach you before you sail, but too late to be directly of use, they may put you on methods of reducing the evil I have anticipated."

Whatever "weight" there may be in the suggestions of this correspondent, he is certainly entitled to the credit of originality, and it is to be hoped that in the laying of the next cable the engineers will have a proper regard for the concavity and convexity of the curve of the descending rope and the northward tendency of the Gulf Stream. But here is another, and although not quite so clear as that already given, still it is a remarkable production:—

"GENTLEMEN—Permit me to suggest to your notice the fact, as time will prove, that you will never lay your electric cable complete till you adopt very different means to those at present employed. When you find the broken cable you will find it broken at a knot, and many more knots may be found tied. This I consider to be self evident. There has been a hundred miles of the cable used beyond the actual distance laid—nearly two-thirds I compute more than shown by the main depths of soundings. I can give an efficient method of how to lay safely, without strain, the cable in a direct line without any waste in angles, at a greater saving in cost. I will say no more at present in justice to myself."

Every one who reads the foregoing will no doubt appreciate the sense of justice by which the writer was actuated, although they may not clearly understand the "angle" difficulty to which he alludes.

Some of the letters were very elaborate, and began usually with an essay on some subject that was supposed to have an intimate connection with the enterprise. Of this character was one which gave some curious particulars concerning the habits of whales, and all of which was intended to show how much easier the cable could be laid by the plan proposed. Conspicuous among the applicants figured a clairvoyant, who expressed a strong desire to be employed by the company for a proper consideration, in return for which, she engaged in cases of break of continuity, to tell exactly in what part the break had occurred, and in the event of fracture of the cable, where the end could be found. All these disinterested applicants, clairvoyants, inventors and all, were summarily disposed of; but not at all discouraged, they kept up their applications and correspondence to the end, and some even threatened to sue the company if they did not adopt their suggestions. It will be strange hereafter if some of them do not lay claim to the credit of having invented the machinery, and seek to deprive Mr. Everett of the fame to which he is so justly entitled.

Mr. Everett having signified his intention of complying with the request of the Atlantic Telegraph Company, associated with himself Messrs. Penn, Lloyd and Field, three English engineers of high reputation, with whom he conjointly made the following report:—

LONDON, SEPTEMBER, 1857.

GENTLEMEN:—Having examined, agreeably to your request, the apparatus and arrangements on board the Niagara for paying out the Atlantic telegraph cable, and given the whole subject our careful consideration, we beg to lay before you the conclusions at which we have arrived.

We consider the paying out sheaves require no alterations except those suggested by Mr. Bright in a memorandum which he was good enough to place in our hands, a copy of which we append, namely:—To have one groove only in each of the sheaves, to make the groove deeper and wider at the periphery, and fit them with guards, to prevent the cable coming off, to apply scrapers for removing the tar from the grooves, and to make the circumference of each successive sheave which the cable passes over as much larger than the preceding one as the cable is found to stretch by the application of the increasing strain which it has to bear in passing round the several sheaves when it is being paid out with the maximum strain, and thus greatly diminish, or perhaps entirely obviate, the slipping of the cable on all the sheaves. We may add, that we see no reason why this apparatus should not also be used for hauling in the cable when necessary, if sufficient engine power be provided for that purpose.

The most important consideration, however, to which we have directed our attention, is how to guard against the strain being brought on the cable while paying out, greater than it is considered capable of bearing without risk of damage—that is, having determined the maximum strain, how to counteract the numerous causes which have a tendency to increase it; and which, especially when brought into operation simultaneously, would otherwise endanger or destroy the cable.

The means which we recommend for this purpose are the substitution for the present brakes of two others, moving with the same regular velocity, but of twice the diameter, and having their rubbing surface of gun metal, about twelve inches wide; each brake to be capable of doing the whole work; but both may be in operation together if found convenient. They should be constructed on the plan patented some years ago by Mr. Appold. Their rims should be lined with slips of lignum vitæ, about three inches broad and half an inch apart, and immersed about one-third of their diameter in cisterns of salt water, it being found by experience that brass and lignum vitæ work together under great pressure with no appreciable wear. Mr. Appold's brake has the advantage of insuring a uniform holding power, so long as the pressure on the lever remains unaltered, capable of being increased or diminished to any required degree with certainty.

A light movable sheave of the same size as those on the paying-out apparatus should be introduced, and be arranged to move horizontally on the deck through a space of about twenty feet, by the action of strong springs of vulcanized India rubber. The cable by passing over that on the stern of the ship would be relieved from the great inequalities of strain to which it would otherwise be subject, and the position of this sheave would at all times be the surest indication of the maximum strain on the cable—a matter of the utmost importance to be known, as upon it should depend the adjustment of the brakes and other operations for ensuring the safety of the cable itself.

The importance of carrying this principle into operation is enhanced in our minds by our conviction that any injury sustained by the cable in deep water, would in all probability be irreparable, it being exceedingly doubtful whether the cable could by any contrivance be safely arrested if broken while running out, or raised from the bottom of the sea.

As an additional means of obviating the danger of breaking the cable, we recommend the adoption of some kind of compensating arrangement to allow for the rise and fall of the stern of the ship in a sea way, which may be controlled either by springs or weights. We have seen at Mr. Hodges', of Southampton Row, vulcanized springs which we feel satisfied would answer perfectly. We think, with these additions and alterations, the apparatus would be greatly improved, and might be confidently expected to answer its intended purpose.

We now beg to offer some observations on matters which, although of comparatively minor importance, ought, in our opinion, to be attended to in order to ensure, as far as may be practicable, the success of an undertaking so novel, great, and difficult; correct instruments should be provided for indicating the speed of the ship and the distance run, as well as the rate at which the cable may be running out, and the whole quantity expended. By means of these instruments and the adjustment of the paying-out apparatus, the rate of the cable above that of the ship may, we think, be regulated with considerable exactness, and the excess, we venture to suggest, should not be less than one-third. This appears to be the only means of allowing the cable to sink into the hollows at the bottom of the sea, instead of hanging, as it might otherwise do in some places, in long loops, supported only at their ends, and consequently having to bear strains which, if not at first, might ultimately produce fracture when the strength of the iron wire became impaired by oxidation. All the machinery should be covered by a kind of house on deck, to protect the attendants from the weather. It should be well lighted at night, and proper accommodation provided for the men when off duty. An adequate number of efficient attendants should be hired to superintend the machinery, who should relieve each other at short intervals, and the greatest care should be taken to keep all the indicators and other instruments in good working order.

In conclusion, we beg to say that we think no practical difficulty would be found in carrying out all the mechanical arrangements we have suggested, and we also think that they should be carried out under the special superintendence of the officer intrusted by the company with the important duty of laying the cable, assisted by the most able, practical machinist, who may be willing to undertake the execution of the work, who should make an experiment ashore on the proposed brake as soon as one can be finished, and such other experiments as he may deem necessary to enable him to arrange the details in the most effectual manner. We are, gentlemen, your very humble servants,

T. Lloyd,
Joshua Field,
John Penn,
W. E. Everett.

Alterations recommended to be made in the Paying-out Machinery.

The sheaves should have single grooves, deeper than those at present fixed, and a slight difference should be made in the diameter of each sheave, the largest leading off to the stern of the vessel, and the smallest of the sheaves leading from the coil. By this the adhesion of the cable to the sheaves will be considerably increased.

Guards should be placed at the lead to the sheaves over the grooves capable of being readily opened to put the cable in its position, or take it out if required, and scrapers should be provided to remove the superfluous tar.

Experiments should be tried in the lubrication of the brakes and of the material of the surfaces in contact, with the view of obtaining the most regular drag.

A travelling pulley should be placed between the stern wheel and the paying-out machine, by which the unequal pull occasioned by the pitching of the vessel will be much reduced, at the same time that an additional indication is given of the strain upon the cable.

Charles T. Bright.

Some of these suggestions were adopted by Mr. Everett, but, as may be seen by the description of the machinery employed on the final expedition, the plan adopted and followed out was almost entirely different from that which had been used on the first unsuccessful attempt.

On the fifth of November, as has been stated, the Niagara left Plymouth for New York, but it was understood before her departure that Mr. Everett should take charge of the construction of the machinery, and for this purpose should return as early as possible the following year. A few days before the departure of the vessel a grand ball and entertainment was given by the officers to the many friends whose hospitality they had enjoyed while in England, and the officers themselves partook of a sumptuous banquet which Capt. Stewart, of H. M. S. Impregnable, gave in their honor. Fifteen days after leaving Plymouth the Niagara arrived in New York, and soon after was put out of commission till she should be again required for the resumption of the great work in 1858.

THE SECOND ATLANTIC TELEGRAPH EXPEDITION.

THE NIAGARA AGAIN AT PLYMOUTH.

The experience which had been gained by the results of the Expedition of August, 1857, led to many changes in the plan of operations for the expedition which was to sail in the month of June. The machinery, as has been shown, had proved utterly inadequate to the performance of the work for which it was constructed, and it was therefore determined, as the reader is aware, that this important matter should be entrusted to the skill and ingenuity of Mr. W. E. Everett. The vessels which had been detailed for the laying of the cable before, were again detached for the renewal of the attempt. Mr. Field had accepted the position of General Manager of the Company at the urgent solicitation of the Board of Directors, and the services of Mr. Everett were also secured on application for leave of absence to the United States Government. Both these gentlemen entered upon the duties before them with all the energy and zeal which so great a work demanded. Some delay attended the application of Mr. Field for the appointment of the Niagara; but that point satisfactorily settled, they started for England in the Persia, on the 6th of January, 1858, and arrived at Liverpool the 16th of the same month. As the subsequent movements of Mr. Field are given in detail in the biographical sketch of that gentleman, we will proceed at once in our narrative of the Second Atlantic Telegraph Expedition.

The U. S frigate Niagara, having received her complement of officers and men, started from New York for Plymouth on the 9th of March, 1858. As some changes had been made in the appointment of the former, the following list will enable the reader to recognize the names of those who were re-appointed:—

Captain Wm. L. Hudson; Lieutenants, Jas. H. North, J. D. Todd, John Guest, Wm. A. Webb, E. Y. Macauley, B. Gherardi; Surgeon, D. S. Green; Purser, J. C. Eldridge; Lieutenant commanding Marine Guard, Wm. S. Boyd; Passed Assistant-Surgeon, F. M. Gunnell; Assistant-Surgeon, Wm. C. Hay; Chief Engineers, J Follansbee,

J. Farren; First Assistant-Engineer, Wm. B. Stamin; Second Assistant-Engineers, G. R. Johnson, M. Kellogg; Third Assistant-Engineers, Wm. G. Buehler, Jas. H. Bailey, J. McElwell, H. Kutz; Captain's Secretary, J. W. Hudson; Purser's Clerk, Edward Willard; Boatswain, Robert Dixon; Gunner, J. Webber; Sailmaker, Wm. B. Fugit; Carpenter, H. P. Leslie; Acting-Master's Mates, J. W. Goodrich, W. W. Brooke, Stephen B. Hudson, A. M. Mason, G. Keyworth, A. Stockholm.

The Niagara arrived at Plymouth on the 23d of March, after a passage of a little over thirteen days. She experienced very heavy weather during the greater part of the passage, and never did she display her splendid qualities to better advantage. From the 9th to the 16th it was unpleasantly rough, and on the 13th, 14th, and 15th it blew a perfect gale. There is no doubt that this was the equinoctial, and it did full justice to itself so far as heavy blowing is concerned. Those who have crossed the Atlantic in the months of March and September can form some idea of the nature of equinoctial gales and of the terrific force with which they sweep over that ocean. Under the heaviest stress of weather, however, the Niagara behaved magnificently, and went through the storm at the rate of ten and eleven knots an hour, and this, too, while other ships were hove-to. Her quickest day's run was three hundred and four miles, and there is no doubt that she would have accomplished the passage in ten days but for the head winds which prevailed from the 17th to the 22d. During the gale she had the wind from the south and south-east, from which it changed to the east, and stuck there with the most dogged obstinacy. While blowing from this quarter we had, however, no complaints to make in regard to the quality of the weather, which, with this one exception, was as fine as could be desired.

A rather melancholy circumstance occurred when the ship was three days out from port. A sailor, named William Wilson, fell from the maintop and was instantly killed. It is supposed that he was struck on the head with a boom, and was thus thrown from the yard. He was engaged at the time in clewing the yard down. Another death took place later in the passage, but it was from a protracted sickness. The name of the deceased was Samuel Scudder, and the disease of which he died pleurisy. They were both buried in a seaman's grave, and had the funeral service read over their remains. Poor fellows, whatever pleasing prospects they may have had when they entered on this special service were doomed to a fearful disappointment. One man fell over the foretopsail-yard, but fortunately was caught by another who was on the same yard, and held there till he was relieved from his perilous position.

The Niagara, as I have said, arrived in the channel opposite Plymouth on the night of the 22d instant, and entered the Sound the following morning. Hardly had she anchored before a number of the officials of the place made their appearance on board, and among these, strange to say, two revenue officers. What their object could have been in thus thrusting themselves on a national vessel of another country, and outraging the rules of international courtesy it is impossible to say, but it is to be presumed that their conduct in this instance was attributable to ignorance—certainly the only reasonable explanation that can be given for such a breach of all the rules of international etiquette. After making their abode on the ship for about two days, they took their departure, and that was the last we saw of them. The Niagara lay in the Sound till the 24th instant, when she weighed anchor and proceeded up the harbor, preparatory to going into dock for the reception of the cable. After her arrival the numerous friends which the officers made during their stay here the year before, paid a welcome visit, and again tendered their hospitalities. Invitations were extended by nearly all the regiments stationed at this port to the officers of the Niagara. I should state here that as an evidence of the friendly feelings which were manifested towards them, all, or nearly all the vessels lying in the harbor cheered them as the ship passed up to her anchorage. The rigging of the Impregnable and other vessels were manned by their crews, who gave three cheers that waked all the slumbering echoes of the surrounding hills. The welcome was responded to with an enthusiasm on the part of the Niagara's men which proved that they were determined not to be outdone in this demonstration of friendly feeling.

Besides the attentions which the officers received from their friends, they were honored with others of the most pressing character. The wardroom was almost literally deluged with circulars and business cards of every description. Tailors, shoemakers, washerwomen, hotel keepers, hatters, &c., &c., were most assiduous in their attentions and solicitations for patronage. Among the business applications was the following gem, which is worthy of publication on this side of the ocean:

> "Mr. Wm. H. Westcott (pupil of Coulon and nephew of Mrs. Williams, the Octagon), professor of dancing, Princess street, Plymouth, teacher for the nobilities' balls, &c., begs to announce to the officers of the army and navy, and his friends generally, that he continues to receive daily adults, irrespective of age, for private tuition in all that is prevailing among the *élite*."

As our readers might imagine that Mrs. Williams is the octagon, it may be as well to state that she is nothing of the kind, but that the particular part of the city in which her nephew receives "daily adults," and teaches "all that is prevailing among the *élite*," is dignified with that title.

It was rumored that the Queen intended to witness the departure of the telegraph squadron from Plymouth, but as there was no certainty about the matter, and as many of us naturally felt desirous of seeing for ourselves what the head of so great a nation looked like, a nation that was to be brought next door to us by the successful termination of the enterprise in which we were engaged, we were determined to go to London and see her, not only in her capital, but in her palace. We were desirous of seeing a real, genuine, *bona-fide* queen, one who wore a crown, for though we were accustomed every day to see sovereigns in our own country, they were without that indispensable adjunct of royalty.

To come to England and go away without having seen the queen is indeed a terrible oversight, a crime, for the commission of which every traveller from the United States must expect to meet with the stern censure of all those curious and wonder-loving friends who expect to be informed on the minutest points. Fortunately, I have seen the queen, and although I was not at her drawing-room, nor honored with an introduction by our minister—for the simple reason that the favor was not requested of him—I had just as fair an opportunity as those who were, and who were graciously permitted to bend the knee before the royal lady, and to kiss her royal hand. By the kindness of a friend I was placed in possession of the following ticket of admission to Buckingham Palace, through the grand hall of which the Queen always passes on her way to hold her drawing-rooms in St. James's:

ADMIT THE BEARER TO THE

GRAND HALL ON THURSDAY,

The 22d of April, 1858, at a quarter past one o'clock.

EXETER, Lord Steward.

BUCKINGHAM PALACE.

⁂ The parties are to retire after her Majesty has passed.

Provided with this, I started out at least half an hour before the appointed time, and made my way to the palace, in front of which I arrived about one o'clock. The next point was to make out the precise part of that building to which it would afford me admission, and which I succeeded in finding by inquiries among the soldiers and police. The entrance to the hall was besieged by somewhat over a hundred anxious expectants, a large majority of whom were ladies, and each of whom possessed a ticket similar to the above. Few, if any, of these had ever seen the Queen before, and it was somewhat amusing to hear the speculations in which they passed the time, regarding her personal appearance and style of dress. Some had heard that she was dumpy, and not at all like a queen; while others were of opinion that her portraits, so far from being flattering, did not do her any thing like justice. There was one who did not appear to be imbued with the proper respect for royalty, and who insisted with a democratic persistence that would not be checked, that the Queen was just like any other woman, and that she could indulge in a glass of ale as well as the next one. A lady, who happened to hear the remark, and who was standing beside the speaker, manifested considerable indignation, and gave a look that expressed, as plainly as a look could, that the aforesaid speaker was "very low." Now, whether she was indignant at the want of reverence manifested by the remark, or whether she supposed she was meant by the "next one," I am unable to say, and will not, therefore, venture an opinion on the subject; but it is a fact that she was very indignant.

A quarter past one was the hour specified in the ticket of admission, but it was nearly half-past one when the door of the grand hall was thrown open—a fact which shows plainly that they have not a very particular regard for punctuality in a palace. However, the door was opened at last, and that was something. Two of the officials of the Queen's household took the tickets, and we were permitted to enter the palace, the majority of us perhaps for the first time. We had to pass through two halls before coming to that which is called, by way of preeminence, the grand hall, and it is certainly worthy of the title. All that marble and statuary and mirrors and fresco painting, under the hands of ingenious architects and artists could do to make it magnificent, has been done. The only drawback, perhaps, is the insufficiency of light, and this want divests it of half its beauties. The palace itself is a splendid structure, and is deserving of all that is said for it in the guide books of London.

But here we are in the grand hall, with servants in knee breeches and red coats glittering in all the effulgence of gold lace, hovering about. Among these same servants is a very dignified old fellow in a blue coat with brass buttons, a white neck-tie, and a waistcoat of the same color—a terribly pompous individual, who holds his head so high that it is only by great exertion he can see any one near him. This character is no less a personage than the master of the outside ceremonies, which signifies that it is his duty to keep the crowd in order, and to preserve the sanctified decorum of the place. Show the slightest indication of a desire to go any further than the prescribed limits, and to use a homely but expressive phrase, he will come down upon you like a "thousand of brick." He is a rough customer—so rough that it is a wonder somebody don't put him in mind of it by an occasional castigation. His treatment of ladies is any thing but courteous; and the exhibition he made of himself on the day in question, was not of that kind which one would expect to see within the walls of a palace. But perhaps such exhibitions are only got up for the benefit and instruction of plebeians, and are never indulged in when any of the aristocracy are in his immediate neighborhood. He is, however, an efficient character in his place, and it may be after all that this roughness only arises from his strong desire to perform his duty to the utmost. But however strict he may be in this particular, the claims of friendship lead him into acts of partiality, which show that he is not altogether a Brutus in his line. His friends and favorites came in for the best seats, and those who were strangers, and who, ignorant of the state of affairs in this department of the palace, imagined that they were open to all alike, were very soon apprised that presumption of that kind was not to be tolerated.

"What are you going to do there?" he said to three ladies who were about to take a seat where they would have a better view of the Queen. "What are you going to do there?"

"Going to sit down," was the very natural reply.

"Well," said the old fellow, "that's a good idea."

The lady smiled as if she thought it was, and the official frowned as if he didn't at all believe what he said.

"Come back here! Who told you to go there?" he rejoined in a tone that was not to be mistaken.

'Nobody," replied the lady in a mollifying way; "but I supposed, seeing others go, I might do the same."

"Ah! indeed," he answered. "Did you? Well, I am afraid you can't. That's quite another thing. You can't sit there."

And so the three were obliged to stand aside, that his favorites might be accommodated. Now, it may have been all very well for him to show more partiality to his friends than to strangers, but his way of doing it was not exactly in accordance with good taste or a strict regard for the feelings of others.

The spectators have taken their places in front of the grand staircase down which the Queen is expected to come, and as the time passes they become more and more anxious. At last the royal carriages are seen approaching through the court-yard, and one of them draws up opposite the door which opens on the grand hall, ready to receive the sovereign. It is a fine establishment in its way, with plenty of gold fringe, and royal coats of arms, and small crowns and other regal appurtenances. A number of the household servants, almost covered with gold lace, now make their appearance, and flourish around the hall through which the ladies of the court are continually passing, on their way to St. James's. Some of these ladies, by the way, are remarkably handsome, and all are dressed in the most elaborate style of ornamentation. They have evidently a great contempt for high-necked dresses, if their feelings are to be judged by the excessive lowness to which they have attained. Their crinolines are wonders in their way, and excited the envying admiration of the fair spectators. But the Queen is said to be on her way, and all eyes are strained to catch a glimpse of her. Pshaw! it is not her, after all. It is merely a gouty old lord, who is making his way slowly down the grand staircase, and who has been mistaken as one of the *avant couriers* of her Majesty. Five minutes more elapse, and the crowd is becoming still more impatient. Now, however, she is certainly coming—no mistake this time—here is a forerunner whose particular duty it is to prepare the way for her approach, and here are six gentlemen, some of them with stars on their breasts—the sign which indicates the difference between a lord, a marquis, or any other member of the aristocracy, and a common man—here are six of them coming down the grand stairs, and according to the rule made and provided in such cases the Queen must soon make her appearance. As the forerunner and the six just referred to, who are dressed in something that looks like a military costume, show themselves, the lackeys at the foot of the stairs and in the hall become wonderfully active, and say something in a loud voice which sounds like the words "stand up," and which, it is to be presumed, is intended for the spectators. However, I am not certain as to the words, and will not, therefore, certify to them, no more than I would to the announcement made by the brakemen on railroads, when they intend to inform the passengers that they have arrived at a particular station; but I do know this—and the fact may be taken as presumptive evidence on this point—that the spectators did "stand up," and remained standing till she passed. The six marquises, or lords, or sirs, or whatever they are, have arrived safely at the foot of the stairs, and the Queen, leaning on the arm of Prince Albert, appears on the landing above. There she is at last, the ruler of the English people, the sovereign of Great Britain, and of colonial possessions whose extent exceeds the territories of any other nation in the world. There she is, a low-sized, and so far as you can judge of her figure, enveloped in a crinoline that Broadway in its most refulgent days never equalled, and probably never will be able to equal, a dumpy, roundabout little woman, in whose appearance, in whose walk, and in the expression of whose face there is about as little of what some call the attributes of royalty, as it is possible to conceive. To say that her portraits flatter her is downright absurdity—they don't flatter her at all—they have made a good-looking woman and written "Queen Victoria" below it, so that those who have seen her may not be mistaken in regard to who it is intended for. Now, in giving a true description, I wish to be historically accurate, although at the same time I'm in hopes that the royal lady, if she ever reads an American book, may not come across the volume in which this account is published. Keeping strictly, therefore, to historical accuracy, let me say, in the first place, that the stature of the Queen is considerably below the medium, that her face is so decidedly not handsome that it may be considered positively ordinary. To offset this, however, it is said that it is particularly pleasing when she smiles, while on the other hand, when she is determined to be unpleasant, the expression it assumes is of the most unprepossessing character. On this head I do not profess to be in possession of the most reliable information, as it is obtained altogether from hearsay. In describing the Queen's personal appearance, my desire is merely to present her to my readers as she looked to me, and I must not, therefore, be accused of writing with a prejudiced mind. The fact is, those who have written about her have been so far under the influence of partiality or prejudice that it would be unsafe to give credit to all they say. But, to continue: Her dress—in regard to which I must confess my utter ignorance of the details, and must, therefore, be excused for attempting any thing like a description—was white silk or *moire antique*, whichever the ladies please; but which it is only fair to suppose was of the richest, the best and the most appropriate material. It terminated in a grand train, which was upheld by two pages, bright-looking little fellows, about twelve years old. On her arrival at the foot of the stairs, she released herself from the arm of the Prince Consort, and relieving the pages from the train, took it up and threw it over her right arm. As she passed the spectators, she acknowledged their presence with a most gracious smile, one in which there was much kindness of feeling and goodness of heart expressed, whatever may be said to the contrary. All her "dumpiness" and want of beauty could not efface this, and you felt in looking at her that you were looking at a woman upon whom the vices of the Court had not and could not make any impression. Whatever ebullitions of feelings she may, as it is stated she does, sometimes exhibit, the fact that she is one of the most virtuous women that ever sat upon a throne cannot be denied. In fact, it is this leading point in her character that has gained her the affection of her people; for virtue in royalty is so rare a thing that it can never be too highly prized. The Court of Queen Victoria is in striking contrast with the courts of many of those who have sat on the same throne which she now occupies. In this regard she is a most exemplary woman, and to this is owing the title by which her people delight to call her. It is particularly pleasing to be able to speak in this way of any woman, and to have it in one's power to state a fact that no want of personal beauty can affect, and that cannot be compensated for by any amount of attraction. While on this subject, let me relate a little anecdote which I have heard here regarding the Queen, and which is said to be perfectly true. It appears that during one of her visits to her country seat on the Isle of Wight, the Prince of Wales got into a difficulty, which resulted in his being whipped by a little fellow less than his own age. His assailant was amusing himself in loading a miniature cart with sand, when the Prince approaching threatened to kick it over.

"Do it," said the boy, "and it 'll be worse for you."

True to his word, and undeterred by the threat, the scion of royalty did upset it with his foot; and true also to his promise, the boy did make it worse for him. The overthrow of the cart was the signal for a fight, in which the Prince came off second best, and was sent home with tears in his eyes. When brought before the Queen, however, he told what had actually happened, what he had done to provoke the boy and to bring on his own punishment. The royal mother thereupon sent for the little fellow, who, finding out the full extent of what he had done, was terribly frightened. When he made his appearance, however, she spoke to him kindly, said he had done right, and magnanimously provided for his education and support at her own expense, on discovering that his parents were in poor circumstances. A woman who could do such an act can well afford to be ordinary.

Prince Albert, who was dressed in military costume, is a tall and good-looking man. He is bald from the top of the forehead to near the crown of the head. His face is so German, that it would be impossible to mistake his nationality; in fact, both himself and the Queen look more German than English. She of course entered the carriage first, and when she had succeeded in adjusting her dress as well as she could, he took a seat beside her. But that dress, with such an amount of rebellious uprising crinoline beneath, would not be put down, and would surge and boil over on every side so as to completely envelope the lower half of the body of the Prince, leaving the upper part alone visible, like a wax-work bust in a barber's shop. When they were both seated, the royal carriage drove off, and the last we saw of the Queen, she was engaged in vain endeavors to suppress the swelling and rebellious crinoline. I would like to have seen her at the drawing-room; but the fact that I was not prepared with a court dress proved an insuperable bar to the indulgence of my desire.

Complying with the directions in the card of admission, the spectators left the palace, and once more made their way into the open street opposite the park. Here there was a considerable military force, the bands attached to which were performing the national anthem. A long line of carriages—over a thousand, I was informed—were drawn up on one side, and almost blocked up a number of the contiguous streets. Among these were those of the Marshal Pelissier, the Ministers of Austria, Prussia and other European nations, and the carriage of Mr. Dallas, our Minister at the Court of St. James. I regretted that my presence in the grand hall rendered it impossible to see the occupants of any of these establishments, and particularly do I regret my consequent inability to have seen Mr. Dallas; but if I had seen him, I could not have seen the Queen, and therein I must find whatever consolation I can. If I did not see him, however, I saw his carriage, as I have intimated, and that was something; and as people may be curious to know what kind of a carriage it is, they must be informed. Let me say, then, at the beginning, that it is so simple and unpretending, that there is really very little to be said about it. It is such a vehicle as you can see any day in Broadway, with a pair of fine horses attached to it, a driver in livery in that position where a driver generally sits, and a footman in that particular spot, where footmen have generally stood. The footman is also in livery, with an American eagle on every button, and both himself and the driver have their hats set off with a gold band and a cockade, or rosette, formed of the American colors. On the carriage doors are the arms of the United States, and, altogether, the vehicle is quite a respectable affair, simple and unpretending. And here I must close the account of my visit to Buckingham Palace, again expressing my regret that I had not seen Mr. Dallas, and was not provided with an opportunity of knowing whether he was habited in the early republican style of old Ben Franklin, or in the modern costume not set forth in the Court circular of the late Mr. Marcy.

Among the crowds of titled fashionables who visited the Niagara previous to her departure from England on the second telegraph expedition, were the members of a family which, but a few years ago, were at the head of one the greatest nations of the world.

Their history is one of the most remarkable on record, and furnishes another proof of the fact that there is no station in life free from those vicissitudes to which royalty and poverty are alike subject. These illustrious visitors were the Prince de Joinville, the Duc d'Aumale, the Duchesse d'Orleans, and the Duchesse d'Aumale, the exiled members of the Orleans family, and the rival aspirants with the Bourbons to the throne of France. They came unheralded and in the most unostentatious manner, and during their stay visited every part of the ship. The Prince de Joinville, who is *au fait* in naval matters, is a man forty-three or forty-four years old, about six feet two, with a frank and intelligent countenance. He wears a heavy pair of whiskers and mustache of a light brown color, dresses plainly and neatly, and his appearance and manners are those of a refined and courteous gentleman.

The Prince de Joinville is, as almost everybody knows, quite a sailor, and startled all England by a pamphlet which he wrote some years ago showing the defenceless state of her coasts, and the ease with which an enemy could be thrown upon her shores. He inspected every part of the ship, under the guidance of Lieut. Guest, who was at the time the senior officer on board. The engine room attracted his greatest attention, and the minuteness with which he examined into all the details—the throttles, the cut-off, and all those mysterious parts, which are known only to the initiated—showed that he was thoroughly conversant with the whole subject. The model of the ship particularly excited his admiration, and he was much pleased with her general appearance. He appeared to be thoroughly posted in regard to the particular duty on which she was detailed, and expressed his opinion pretty freely upon the nature and character of the enterprise. It was his belief that the cable should be lighter than it is, and that the outer covering or wire armor should be dispensed with. The strength which it received from this was, according to his ideas, not sufficient to compensate for the disadvantage arising from the greatly increased weight. He acknowledged that, by making the line without the wire armor it might become too buoyant; but he thought this difficulty might be removed by attaching some soluble material to it sufficiently heavy to sink it to the bottom, where the cable would remain even after the material itself should have been removed by the action of the water. The Prince had more to say on all subjects than any other of the party.

The Duc d'Aumale appears to be some four or five years the junior of the Prince de Joinville, and does not even look sufficiently like him to be of the same family. His hair is of a light red color, so are his whiskers, and he is less in stature by about three inches. Both brothers speak English with an unmistakably French accent; but, with this exception, they speak it well and fluently.

The ladies are both elegant and *distingué* looking, rather above than below the medium height, and are very unassuming and courteous in their manners. They are all free from that *hauteur* and reserve which are supposed to be the peculiar attribute of royalty, and are as cordial, as frank, and as sociable as the most unpretending republican could be. On leaving the ship they expressed themselves much pleased with all they had seen, thanked Mr. Guest again and again for his kindness, shook him warmly by the hand at parting, and expressed their hope in the success of the expedition.

INSPECTION OF THE PAYING-OUT MACHINE.

In the factory of Messrs. Easton & Amos, Gravel Lane, London, Mr. Everett was daily and nightly engaged in attending to the construction of the paying-out machinery; and when at last after weeks of unremitting labor it was ready for inspection, invitations were sent to the following gentlemen: Captain Hudson, of the Niagara; Capt. George W. Preedy, of the Agamemnon; Cap. J. Dayman, of the Gorgon; Mr. Joshua Follansbee, Chief Engineer of the Niagara; Mr. Faron, Chief Engineer, and Mr. McEllwell, Assistant Engineer of do; Mr. Hoare, Chief Engineer of the Agamemnon; Mr. Moore, Assistant Engineer of do; Mr. Morris, Mr. Samuel Canning, H. Clifford, H. Woodhouse, Mr. Brunel, J. S. Gilliatt, Rev. W. Mitchell, Messrs. C. & J. Johnson, Mr. J. Bower, Capt. Nolloth, R. N., Mr. C. W. Tafling, Mr. Kiddle, Mr. H. Stephenson, Mr. W. Brown, M. P.; Prof. Thompson, Mr. Gurney, M. P.; Rev. G. C. Schwabe, Mr. Pickering, Mr. Pender, Mr. Peabody, Mr. Logie, Mr. Le Breton, Messrs. Lampson, Johnston, Hornby, Harrison and Dugdale.

The majority of these gentlemen were present, and among them Mr. Brunel, who has gained such a world-wide reputation as an engineer, and who is one of the greatest scientific men of the day. Mr. Brunel is the son of the constructor of the Thames Tunnel, and is the architect of that eighth wonder of the world, the Leviathan. He is about forty years of age, of a plain, good-natured and most propossessing exterior. Like all true men of genius, Mr. Brunel is a modest and unassuming man, and is what might be called the *beau ideal* of a mechanic. Among the convocation of scientific men who assembled yesterday to examine and pass their verdict upon the machinery, he was the least conspicuous in personal appearance, and certainly the very last who would have been selected as the great English engineer. He was accompanied by his son, a perfect *fac simile* of himself, having, however, the advantage of being a couple of inches taller. The two were the most democratic in their manner, in their dress, and in their general appearance, of those present. Mr. Everett explained the principles and details of the machine to them both, after which the father and son had a little quiet tour of inspection to themselves. Mr. Brunel expressed himself much pleased with the whole affair, and was confident of its successful operation. The machine was running during the whole day, and accomplished all that was claimed for it. An illustrated and detailed description of it is given further on in this work.

The following letters were subsequently received from the gentlemen whose signatures are appended:

London, April 23, 1858.

George Saward, Esq., Sec. of Atlantic Telegraph Co.

Sir—I beg to say that I have attended at the works of Messrs. Easton & Amos every day during the construction of the new paying-out machinery, and saw it working on Thursday last. It is, in my opinion, well adapted to the intended purpose, and I have nothing to suggest that could render it more perfect. I am, dear sir, your most obedient,

HENRY CLIFFORD.

London, April 30, 1858.

Dear Sir—With reference to your request of the 19th instant, we beg to state, for the information of the Directors of the Atlantic Telegraph Company, that the machinery for paying out the cable is, in our opinion, well calculated to answer the intended purpose, and that we have no alteration to suggest. The apparatus for showing the speed of the ship, and for recording the total distance run, should of course be completed and fixed on board the Agamemnon and Niagara before the preliminary trials are commenced on board those ships, and the apparatus for showing the rate at which the cable is being paid out, and for registering the total quantity, should also be fixed on board. There will be ample time for this purpose, and no difficulty need be apprehended. We are, dear sir, yours truly,

T. LLOYD,
JOHN PENN,
JOSHUA FIELD.

Cyrus W. Field, Esq., &c., &c., &c.

London, April 24, 1858.

Dear Sir—I have witnessed the operation of the machinery for paying out the Atlantic Telegraph Cable at the works of Messrs. Easton & Amos, in compliance with your invitation of the 19th inst. With the exception of the scrapers to clear the wheels of tar, not yet completed, and a guard for the cable as it enters upon the grooved wheels, which Mr. Everett informs me will be applied, I know of nothing further needed, and regard it as well adapted to the purpose for which it was designed. Very truly, yours,

JOSHUA FOLLANSBEE,
Chief Engineer United States Navy.

Mr. Geo. Saward, Secretary to Atlantic Telegraph Co.,
No. 22 Old Broad Street.

Atlantic Telegraph Company,
22 Old Broad Street, London,
Engineer's Department, April 24, 1858.

To the Directors of the Atlantic Telegraph Co.:

Gentlemen—Since the report which I made to you in conjunction with Mr. Everett, of the 6th inst., in regard to the paying-out machinery and the result of the experiments relating thereto, a complete machine has been erected at the works of Messrs. Easton & Amos. The trials which have been made with this during the last few days have been perfectly satisfactory, and I have nothing further to suggest as an addition to, or an alteration in, the machinery, unless the experiments at sea should give rise to any modifications of our appliances prior to the departure of the actual expedition. I am, gentlemen, yours very faithfully,

CHARLES T. BRIGHT, Engineer.

While Mr. Everett was engaged in the construction of his machinery, Prof. Hughes was experimenting with his printing telegraph, on the whole length of the cable, while it was being coiled on the Niagara and Agamemnon. His instrument was not as perfectly adjusted as he desired, but he accomplished enough to show that it was the best adapted to the working of the cable, and with a few modifications, could be made to transmit from seven to ten words a minute under the most favorable electrical conditions of the line.

Every preparation was made to hasten the departure of the Telegraph Squadron on the trial trip, which it was decided should take place in the Bay of Biscay, and by the 29th of May the vessels were ready to sail. Before, however, describing their operations there, we will lay before our readers a detailed description of the vessels composing the Squadron, the mechanical and other arrangements which had been made for the great work, and all that is necessary to a proper understanding of the subject.

THE TELEGRAPH SQUADRON.

The vessels composing the Squadron were the U. S. frigate Niagara, H. M. steamers Agamemnon, Gorgon, Valorous, and Porcupine. As a description of the Niagara has been given in the narrative of the first expedition, it is merely necessary to mention her name.

The Agamemnon is one of the best line-of-battle ships in the British Navy. Her dimensions are as follows: Length between perpendiculars, 230 feet; breadth of beam, 55½, and depth of hold 24½ feet. The capacity of the ship is 3,102 tons, and her engines, of which she has two, are both 600 horse power. Her force at present numbers about 450, but her full complement, when on a war footing, is over 600. Her full armament consists of 91 guns, of which 34 are 8 inch shell guns on her lower deck, 14 on her spar deck, 32 pounders, and 36 on her main deck are also 8 inch. In addition to those, she carries on the forecastle six 32 pounders, and one heavy gun of 9,550 pounds, for throwing 8 inch solid shot. All the guns are made for firing shells. The Agamemnon was launched at Woolwich in the year 1852, and is said to be one of the fastest of the screw vessels of the British fleet. Her engines are known as the trunk, with horizontal cylinders, and their nominal horse power is capable of being worked up to 1,800. The motive force is supplied by four tubular boilers, which are made to resist a pressure of 17 pounds to the square inch. There are five furnaces under each of these, and the whole machinery is two and a half feet below the water line. The boilers, in addition to this, are protected from shot by the coal bunkers. As the engines and firerooms are nearer than usual to the stern, it accounts for the shortness of the shaft, which is sixty feet less than that of the Niagara. Its diameter is thirteen inches, and length forty feet, while the propeller is about eighteen feet in diameter, with a pitch of twenty feet six inches. Its weight is eight tons, exclusive of the gearing, and it is made of a composition called gun metal. The number of revolutions at the highest speed is fifty-four to the minute, and rate with a consumption of fifty tons of coal a day from nine to ten miles per hour.

The Agamemnon was Sir E. (now Lord) Lyon's flag ship, and took a part in the assault on Sebastopol on the 17th of October, 1855, from which she retired considerably damaged. On that occasion she approached within seven or eight hundred yards of the place, from which she retired with three or four of her ports knocked into one, several of her spars splintered, and with considerable other damage. To fit her for the work in which she is now employed, all her guns have been removed, and she has had frigate masts put in her. The following is a correct list of her officers, those with the asterisk prefixed having served on the last expedition: Captain, George W. Preedy; lieutenants, E. H. Murray, Hon. F. Fitzmaurice, F. C. B. Robinson, R. Gibson; master, H. A. Moriarty; paymaster, John N. De Vries; engineer, James Brown; assistant engineers, John Brown, W. B. Harvey, Edwin Pearce, Samuel Clements, William Smily, John Heffernan; surgeon, William D. Kerr; assistant surgeon, *W. W. P. Smyth; clerk, F. A. Pountney; carpenter, R. Rian; gunner, E. Snell; boatswain, Richard Farrell.

The Gorgon is one of the oldest steamers in the British navy, having been built some nineteen or twenty years ago. She is a comparatively small vessel, but at the time she was constructed she was regarded as one of the largest vessels in the whole English fleet, and as a wonderful specimen of naval architecture in her way. Her measurement is 1,111 tons, her armament six guns, which she carries on her spar deck; and her engines are 320 horse power. She accompanied the Niagara as an escort in the place of the United States steam frigate Susquehanna, which was in the last expedition, but which was prevented from accompanying this on account of the yellow fever having broken out on board of her while in the West Indies. The following is a list of the officers of the Gorgon: Commander, Joseph Dayman; senior lieutenant, J. B. Michell; lieutenant, J. B. Butler; master and pilot, C. Albert; paymaster, A. F. M. Roberts; surgeon, H. Gimlette; chief engineer R. E., Horne; clerk, Charles Wm. King; first assistant engineer, W. Pilcher; second assistant engineer, J. Spinks; third assistant engineer, P. Richmond; boatswain, H. Blake; carpenter, John Harcus; gunner, B. Howe; third assistants, R. Dillon, P. Baldwin.

The surveying steamer Porcupine is one of the smallest class of steamers in the English navy, and was built in 1844 for surveying purposes. Her engines are 132 horse power, and her measurement is 382 tons. She will also accompany the Niagara as a leading vessel to steer by, while the Gorgon will be employed when necessary only in towing, that is, in the event of any accident happening to the Niagara. The following is a list of the Porcupine's officers: Captain, Henry C. Otter; lieutenants, Albert Dent, Edward W. Hawes; master, William Stanton; surgeon, Francis McAree; second master, George Stanley; assistant paymaster in charge, Edmund B. Walker.

The steamship Valorous took the place of the Leopard, which accompanied the Agamemnon on the expedition of 1857 as her escort. She is reputed to be one of the finest side wheel steamers in the British navy, and carries an armament of sixteen guns. Her horse power is 400, her measurement 1,250 tons, and her full complement 220 officers and men. The following is a list of her officers: Captain, Wm. C. Aldham; lieutenants, R. Moore, G. S. Key, Hon. J. S. Fitzmaurice; master, S. Braddon; surgeon, A. Murray; paymaster, W. M. Shanks; chaplain and naval instructor, Rev. D. J. Boutflower; assistant surgeon, P. B. Mansfield; mates, Hon. E. L. V. Mostyn, W. H. Ryde, C. P. Heaslop; lieutenant, Rd. Williamson; assistant engineers, W. Farquharson, J. Broach, J. Scott, H. Walker, Robt. Gilchrist.

THE ENGINEERING AND ELECTRICAL CORPS.

The organization of this department on board both the cable ships was much better than it was in 1857, so that there could be no complaint in regard to its effectiveness, and the watches were arranged in such a manner that the machine need not at any time be left without proper attention. In addition to Mr. Everett and Mr. Woodhouse, there were Mr.

Joshua Follansbee, the chief engineer of the ship, Mr. M. Kellogg, and Mr. McEllwell, assistant engineers, all of whom kept watch. This made a force of engineers for this particular duty alone. Captain Kell had special charge of the coil, which he shared with Mr. Goodrich, master's mate, Mr. Fugitt, sailmaker, and Mr. Webber, the gunner of the Niagara.

On the Agamemnon were Mr. Amos, Mr. Clifford, Mr. Canning, and Mr. Bright, who were assisted by Mr. Hoare and Mr. Moore—two of the engineers of the Agamemnon. Mr. Amos did not go out on the expedition. The following is the numerical force of the staff on board both ships:

Engineers and assistants on Niagara,	5
Engineers and assistants on Agamemnon,	6

The electrical department was composed of the electricians, the operators and the splicers. Mr. De Sauty and Mr. Laws had the electrical force on the Niagara under their charge, while that on the Agamemnon was directed by Dr. Thompson and Mr. Bartholomew. The following table gives the number in each branch of the electrical departments on board both ships:

ON NIAGARA.

Number of electricians,	2
Number of operators,	4
Gutta percha joiner,	1
Splicers of cable and assistants,	4
Total,	11

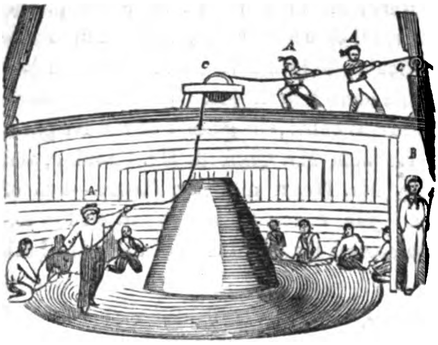
ON AGAMEMNON.

Number of electricians,	2
Number of operators,	4
Gutta percha joiners,	2
Splicers of cable and assistants,	3
Total,	11

THE COILING PROCESS ILLUSTRATED.

As a great deal of importance is properly attached to the process of coiling, there is no part of the work which receives more care and attention, and which demands the exercise of a larger degree of vigilance. Some idea of it may be formed when it is known that every mile, every yard, every foot of the cable is laid down with as much precision, as much regularity, and as much neatness, as thread is wound upon a spool. The way the work of coiling is performed is exhibited in the following drawing, which was made on board the Niagara, and which presents an accurate and life-like representation of the scene.

Here the coilers are represented at work, while the manner in which the cable is drawn on board is also shown. The coiling is commenced



A A A—The cable payers.
B—Passage outside of the cable.
C—Roller over which the cable passes.

on the outer edge of the circus, or circle, and approaches nearer to the cone as each round is laid, until the cone is finally reached. Thus the first flake is laid, and flake succeeds flake till the coil is finished—that is, till it is carried as near the beams of the deck as possible—until, in fact, the space between the top of the coil and the deck beams is insufficient to allow the continuance of the work. Each measures from three to four miles in length, according to the diameter of the circus and the number of flakes varies from one to two hundred, according to its height. On the Niagara a force of one hundred and twenty cable coilers was organized, and these were divided into two equal gangs—one gang for the forward and the other for the after coils. Each gang of sixty is next subdivided into two watches, who relieve each other every four hours. By this arrangement thirty men are employed at a time on one coil, and of these one or two is engaged on deck hauling the cable inboard over the rollers. One of these rollers is placed over the hatchway immediately over the cones, so that it is drawn with the greatest ease into the circus below. As it is thus transpaid down by the cable men on deck, it is seized by another who runs around the circle with it, paying out a portion to each one of the coilers by whom he is encircled, and who pack it as close as possible. The adhesive nature of the tar with which it is covered as a protection against the rust adds to its flexibility, and helps to keep it in its place when once laid. Each flake is as it were glued together, but not so firmly as to prevent its uncoiling without difficulty, when the process of paying out has commenced. The effect is rather beneficial than otherwise, as there is no danger on account of this adhesiveness of its being uncoiled faster than it is run out over the ship's stern, and consequently less liability to kinking. Under each flake are placed thin lath-like boards, at intervals of seven or eight feet apart, to prevent the possibility of one flake sinking through the interstices of the coil, and becoming confounded with the one immediately below.

Every precaution, as has been stated, is taken to secure the proper performance of this part of the work. Each gang of coilers has a foreman, and each foreman an assistant. The foreman inspects each layer of flakes, while the assistant follows close upon the heels of the payer, and sees that the men pack the cable closely. The payer himself is one of the coilers, each coiler taking his turn of hauling down and trotting round the circus every twenty minutes or half an hour, by which time it is supposed his arms will be pretty well tired. From two to two miles and a half of cable is coiled in an hour, and from fifty to sixty miles, when the men are obliged to work night and day. The kneeling position in which the coilers are placed would seem to indicate that they are engaged in devotional exercises, but they are supposed to be resting just at this particular time, having been seated for some two hours before they changed their posture. Each operative is provided with a seat of the most primitive description—sometimes a plain block of wood hollowed at the top so as to form a fitting receptacle for that part of the corporeal system which is to be deposited thereon. Others are less primitive, and occasionally assume the form of a stool of the most lowly dimensions, that the coiler may not be obliged to stoop too much. But after all, there is very little stooping, as each man is obliged to bend but once every time the payer goes round the circus. The work is not therefore very heavy, and the coilers make it more a labor of pleasure than any thing else. They are dressed in a regular uniform of duck, which is in glaring contrast with the tarred cable, the frequent contact with which does not tend to improve its color. As their hands are not exactly in that state of cleanliness in which a man would sit down to dinner, and as the tar makes them somewhat sticky, they are supplied with oil to lubricate them about once every two hours.

Those same cable coilers were wonderful fellows—as wonderful indeed as those who performed the work last year while the Niagara lay in the Mersey, and are therefore as deserving of as much attention. The cable circles, too, were the scenes of performances as interesting as extraordinary, and as amusing as before. I know there are sceptics who will sneer at such an assertion, and who imagine that where there is so much tar there can be little or no social enjoyment; but they are like all other unbelievers—they have no heart or soul for any thing, and what other men would find pleasure in has no allurement or interest for them, but is a dull, unmeaning blank. So much for the sceptics, and now for the sights and scenes among the cable men.

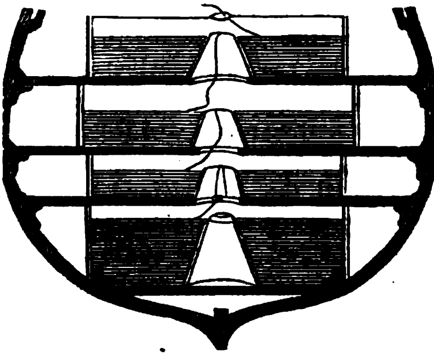
The wardroom circus is situated on the main or berth deck, and is generally an object of the greatest interest to visitors. On either side of it is a narrow passage, which was formed by cutting off about one-half of the officers' rooms. The privacy of both these miniature apartments is secured by means of a canvas wall, behind which, as behind a stage curtain, all those changes in the personal appearance of the occupant are affected which transforms the natural into the civilized man. Here he makes his toilet, and here, in this little room—seven by ten—he has his library of half a dozen volumes, his wardrobe, and all the other etceteras which make up the domestic part of an officer's world on shipboard. It requires no ordinary amount of genius to economize the little space in which he is cooped, and when nearly one-half the room is cut away, he is a prodigy indeed who can successfully manage with the other half.

Every morning about seven o'clock the cable coilers commence operations, and from that hour till six in the evening they never cease working. There are two watches of thirty men each, who relieve each other every four hours, and who are under the supervision of several directors or superintendents. When the first of these watches took possession of the circus and began their work, their uniform of duck was almost as white as snow, but hardly three days elapsed before it became as black as mourning weed, with here and there a patch of white gleaming through. "The Knights of the Black Hand," as the coilers were dubbed, rather like this change, and never omit an opportunity to improve upon it. Thus the backs of all of them are marked with the armorial bearings of their knighthood, the sign manual of their title of nobility. The emblem is stamped upon the wooden wall of the circus, among an array of artistic decorations and embellishments such as the world has rarely, if ever witnessed. The star-spangled banner is repeated again and again, with a patriotic persistency that never tires, while whole flocks of American eagles are soaring on tireless wing. These extraordinary exhibitions of artistic skill are got up without the aid of brush, pencil, or any of the usual instruments known to the world of art, and are to be regarded with still more consideration on that account. The forefinger of the right hand is employed as a substitute for the pencil, the brush, and the crayon, while the well-tarred palm of the left answers all the purposes of a palette. With such facilities as these present you would be astonished at the new wonders that are every day created within the circumference of the cable circus. Some of the artists devote their attention to illustrations of animated nature, and the specimens they give of the feathered tribe and other forms of animal life are without parallel in the works of Audubon, Cuvier, or any of the great naturalists. There are horses and deer such as Rosa Bonheur or Landseer never dreamed of, and probably never could, with all their wealth of genius, imagine. Dogs of the most remarkable dimensions, some with elephants on their backs, and others with eagles, attract the admiring gaze of the spectator, and share the praise with tom-cats, whose belligerent character is indicated by the swelled tail and raised back, infallible proofs of feline antagonism. Then there are fat porkers that would gladden the heart of a Cincinnati dealer to look at, and sheep with tails of the most remarkable dimensions. One portion of the circus is devoted exclusively to a grotesque procession of animals of every conceivable and inconceivable description, supposed to be on the march to some invisible Noah's ark. Fishes are to be seen out of their element, and apparently on the most sociable and companionable terms with the feathered denizens of the air. But the fancies of art do not stop here. They seek other fields for their flights, and illustrate the achievements of the champions of the ring, and the prowess of that enlightened portion of the community who patronize and maintain the manly art of self-defence. Prize fights are quite numerous on the boarded wall, and by way of variety, and to satisfy those whose refined natures and nice ideas revolt at such a vulgar way of settling private disputes or claims to personal superiority, duels with swords and pistols are also illustrated. The pugilists are in a large majority, however, and their tremendous muscular developments as compared with the skeleton-like forms of the duelists, would seem to convey the idea that their peculiar profession is good for the health. Now from all this there is but one conclusion to be drawn—that a cable circus is a remarkable promoter for the development of genius. But after all, the coilers have not much time to devote to works of art, and perhaps to this fact may be attributed the difficulty which the spectator sometimes finds in making out the exact character of the object intended to be represented. Occasionally a horse is mistaken for a dog, and were it not for the indispensable trunk the elephant might not be recognised at once. As for the pigs, sheep, and cows, it must be confessed that nature is not exactly copied, and that the aberrations of genius roam unrestricted through such extended fields of fancy, that it is impossible for ordinary minds to follow. No matter how much critics, however, may differ in regard to the quality or the truthfulness of these works of art, they must agree in one thing, that cable coiling is not the disagreeable occupation which some suppose, and that the cable coilers are as jolly, as pleasant, as jovial, as witty, and as humorous a set of fellows as were ever gathered together. While they coil flake after flake and layer after layer, they are as merry as the day is long, that is, in midsummer or thereabouts, when the day is longest, which makes all the difference in the world, so far as the force of the comparison is considered. Unpleasant work! Why, there never was work which was performed with greater alacrity and willingness. So eager were the men in regard to it, and so willing were they to offer their services, that when the demand was made for volunteers, the whole ship's crew came forward, and some difficulty was found in the selection of the necessary force. Every mile that is coiled, instead of wearying, appears but to give renewed strength to the coilers, and at the end of every four hours' watch they are apparently as fresh and vigorous as when they commenced. Each day, too, they have new jokes, new yarns, new conundrums, new Joe Millerisms, and a whole budget of new things in the jocular and humorous line. So exacting are they on this point, that an old joke is scouted at with indignation, and the joker himself severely censured for the attempt which he has made to impose on the good nature of his hearers. All the coils are distinguished by the same pleasant scenes, the same social features. In describing, therefore, one circle, we have, in fact, described all, but as there are some points of difference in that which is now being filled in the hold a brief reference to it may not be altogether unnecessary.

In making our way from the wardroom coil to that to which we propose to take our reader, the path is beset with difficulties to the uninitiated, and an attempt to reach it without a thorough knowledge of these is generally attended with a penalty, such as those who have tender feet and legs, or who are at all inclined either to lightness or heaviness in the upper regions, should avoid by securing the services of a guide. Leaving the wardroom coil behind us, we go forward on the main deck, pass the engine hatch on the left, and the ship's dispensary, the sailing master's, the purser's, and other rooms on the right. Pressing on still further, we reach the forward main deck coil, which will be one of the last filled up, and which is now only partially boarded up. A narrow passage on either side is the only means of egress to the fore part of the ship, where the cooking for the captain, officers, and men is carried on, and the odor from which tells us that interesting prelude to a more interesting performance is being enacted. But the way up to this point, that is, to the coil, is the easiest part of the passage—the most difficult has yet to be encountered.

By looking through the opening in the cone of the circle, where we now stand, we can get an indistinct view of that into which we will soon descend. It looks dark and gloomy, contrasted with the dim daylight which lights up this deck, and the occasional gleam from the forty or fifty candles by which it is faintly illuminated, serves but to make the prevailing darkness still more visible. Down through the centre of this cone, down through the centre of the cone of the circle on the orlop deck, down into the circle of the coil at which we are now endeavoring to get a glance, comes the deep sea line, black as the ink with which I write, and as it is hauled down it is packed away in flakes by the thirty men who sit around the circle. Close your ears as you look, and you have below you a scene which necromancer's craft never equalled; yes, in comparison with which even the boasted powers of his magic art appear insignificant. Through that blackened wire rope, as it is laid on the bottom of the great deep, will flash the subtle messenger of man, with a speed that outruns the sun in his course, and with which thought itself would run an unequal race. This is the necromancy of science, the creation of human genius, the very climax of human invention. Let your hearing return, and listen—that hearty laughter has no unearthly sound, but is as rollicking, as jovial and as cheerful as ever came out of mortal throat. Having given full liberty to one of your senses, you must now make another do double duty. You must open your eyes, and be just as wide awake as it is possible for you to be. Descending about ten feet we reach the orlop deck circle, which is almost similar to that on the deck above. Another descent—fourteen feet farther down—and we stand upon the top flake of the rapidly increasing coil, the hold coil, the largest in the ship, which is to contain four hundred miles of the great sea line. We are now twelve feet below the water level, and in the lowest point of the vessel which it is possible for us to reach. An immense cone, larger than any that we have yet seen, stands in the centre of the circle like the peak of an extinct volcano. Around us is the magic, the necromantic circle, who are no more nor no less than thirty "Knights of the Black Hand" bearing the device upon backs, breasts, and sides, which attest their position on board ship as unmistakably as the red cross distinguished the crusader from his Saracenic foe. They are all out of the reach of daylight, and all the candles they can find places for are barely sufficient to chase away the darkness. Still there is plenty of light, not only to enable the coilers to see what they are about, but to enable them to coil as neatly, as rapidly, and altogether as successfully as those in the wardroom circus, between whom and themselves there is considerable rivalry. In point of wit, humor, fun, story-telling, ability, and all the other qualifications which are necessary to make what is called "a good fellow," they are not a whit behind those same wardroom circus men; and although they may be somewhat below them in position, considering the distance the coils are apart, they are their equals in every respect, and their title to knighthood is just as well earned and as well graced. They can coil at the rate of two and a half miles an hour, and take as much pride in doing their work well. In fact, it would be impossible to decide which should have the palm. They are both well drilled, and for this due credit must be given to Mr. Fugitt, the sailmaker; Mr. Webber, the gunner; Capt. Kell, and Mr. Goodrich, master's mate, for their careful and attentive supervision of the coiling.

The following engraving, representing the coils in the forepart of the ship, is intended to show their exact proportion, and is according to a scale of twenty-five feet to an inch:

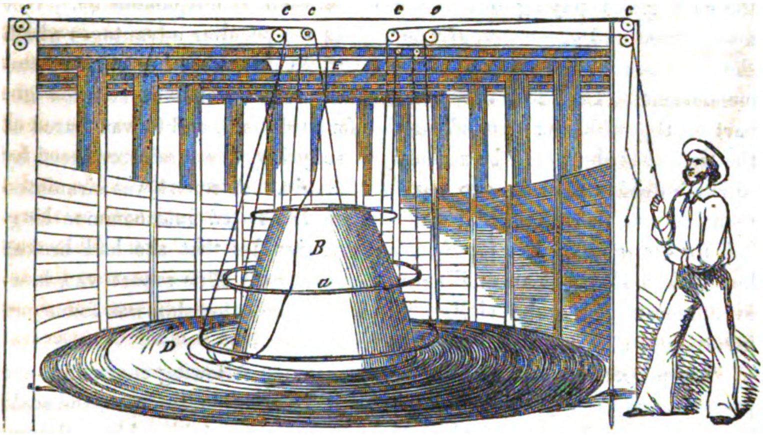


SECTION OF THE NIAGARA, SHOWING THE STOWAGE OF THE COILS IN THE FOREPART OF THE SHIP.

The base of the coil in the hold, it will be perceived, is not so regular and does not cover so much space as that of any of the others, on account of the construction of this part of the ship. The height from the floor to the deck above affords a large space for the coiling of the cable, and a much greater length is therefore placed here. This may be seen by reference to the table of coils. The same plan is observed in the construction of these four circles that has been described already, so that it is merely necessary to call attention to the fact.

THE CABLE CIRCUS, THE CONE AND FAIR-LEADERS.

The greatest vigilance and caution are required in the making of the coils, and in the paying-out process—in fact, every thing depends upon these two essential points, and any inattention to either is fraught with the most dangerous consequences to the success of the enterprise. The proper form of coil was at one time a subject of considerable discussion, and great difference of opinion prevailed in regard to the respective advantages of the circular and elongated, both of which had warm advocates. After satisfactory and conclusive trials the circular was finally adopted, and whatever merits the other form may have, it is now generally considered obsolete. The circular coils were the kind used on the Niagara and on the Agamemnon, with one trifling exception. The hold coil on the latter was of an oval form, but far from being what is regarded as an elongated one. The construction of a proper receptacle for the coil was also a matter of much debate, and no inconsiderable amount of labor was expended before the present cable circus—or, as it is sometimes called, cable tank—was perfected. There were two things to be accomplished by its construction—the first was to prevent the cable from bulging out and the second to prevent it from becoming entangled in the centre. Then there was another and no less essential matter to be attended to to secure it from kinking, as it was unwound from the top or surface flake. Now, simple as the arrangements to secure these ends may appear, they did not reach their present state of perfection till the work of laying the Atlantic cable was entered upon. In the following engraving is presented a correct representation of the circus, the cone and the fair-leaders:



THE CABLE CIRCUS, THE CONE AND FAIR-LEADERS.

a—Large iron rings for fair-leaders and to prevent kinking.
B—Cone.
c—Pulleys with iron tricing lines for raising fair-leaders.
D—Portion of cone coiled.
E—Hatchway with the cable going up.

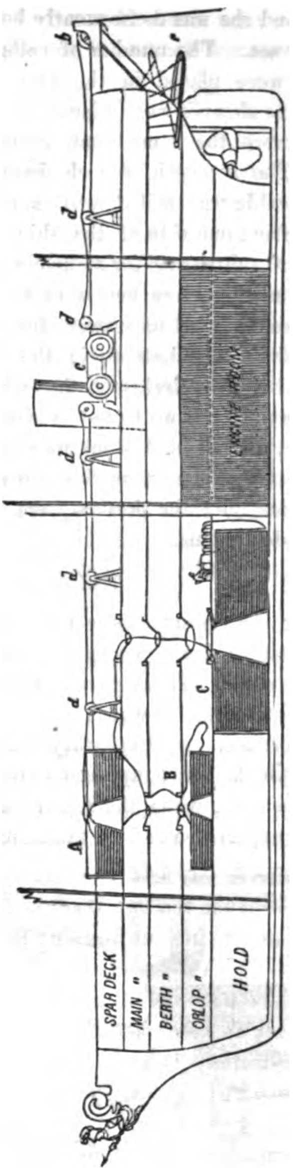
The circus is enclosed to a height of four or five feet, or as high as the coil rises—the enclosure being made of ordinary uprights or stancheons and rough boards. The floor is overlaid with common planking, upon which is placed a covering of zinc, for the protection of the deck, which would otherwise be stained by the tar with which the cable is saturated. The cone, which occupies the centre of the circus and coil, and is made of oak or some other hard wood, ranges, according to circumstances, from seven to nine feet in diameter at the base, and from three to five at the top. The particular part it is required to perform is to prevent the cable from becoming entangled in the centre of the circle, and to secure it a safe passage through the hatchway. The large iron rings, or fair-leaders, which encircle the cone, are intended to prevent the cable from kinking as it is unwound. The cable passes under these, and up between them and the cone, and in this way any tendency which it might have to kink is removed. The fair-leaders are secured by wire rope to the beams, and are capable of being lowered by means of pulleys, as the cable is reduced in paying out. The operative, who is represented in the act of lowering one of the fair-leaders by means of the wire rope, stands in a narrow passage, between the outer planking of the circus and the side of the ship.

THE COILS, ETC., ON THE AGAMEMNON.

There is perhaps no vessel in the British navy better adapted for the coiling and paying out of the cable than the Agamemnon. Her massiveness and great strength, as well as the peculiar advantages which she possesses for the stowage of the great sea line, were her chief recommendations. In 1857, the whole 1,250 miles which constituted her part of the cable were coiled in the forward hold, and it was feared at the time that she would be seriously damaged by the strain produced by so much dead weight in one part of the ship. A report was circulated then that she was "hogged," which, when translated into common English for the unlearned in nautical matters, signifies that she had broken her back, and was in an unfit state to go to sea. This report was, however, ascertained to be without foundation, and the ship was found, on investigation, to be in perfectly seaworthy condition.

The proportions of the ship, as given in the following engraving, are preserved as exactly and accurately as it is possible to do so, the scale being forty-six feet to an inch. The whole weight of the cable is thrown on the forepart of the vessel, between the fore and main masts; the machinery, stores, and coal, being in the after part, keep her on an even keel, and thus preserve that steadiness which is so necessary in the work she has to perform. With cable, coal, and all her sea stores on board, the Agamemnon drew about twenty-seven feet, which brought the water line almost to a level with the cable guard attached to the stern. An accurate idea may be formed of the way in which the cable was paid out from the several coils by reference to the engraving. The coil indicated by the letter A was first paid out, then coil B followed next in order, the hold coil C being the last reached. As the distance between all the coils and the paying-out machine (*c*) is over a hundred feet, the rollers (*d d d d*) are placed at regular intervals, to steady it in its progress. These rollers are made of iron, and are raised on a framework to the height of six or seven feet above the level of the spar deck. After the cable is delivered from the machine, it passes out over the wheel (*b*), which is secured by large wooden beams over the stern of the ship. This wheel, or sheave, as it is sometimes called, is about five feet in diameter, and has a groove five inches deep. As the forepart of the ship was of course lightened in proportion to the amount of cable paid out, the afterpart was lightened in an equal degree by the consumption of coal and by the removal of the ship's stores. Thus the equilibrium was preserved until the whole work was completed.

After the first coil, A, is exhausted, the line is taken from the coil B, through the hatches of the spar, main, and berth decks, its course being regulated by the iron rings or fair-leaders through which it passes, and which prevent its surging. These fair-leaders are different from those represented in another engraving in thus being fastened to the hatches, and cannot of course be raised or lowered. The part of the illustration representing the paying-out machine is necessarily on such a limited scale as to render any attempt to give the detail altogether impossible. It is, however, illustrated in another part of this work, and will be found, with a full description, under the appropriate head.



SECTION OF THE AGAMEMNON WITH CABLE ON BOARD.

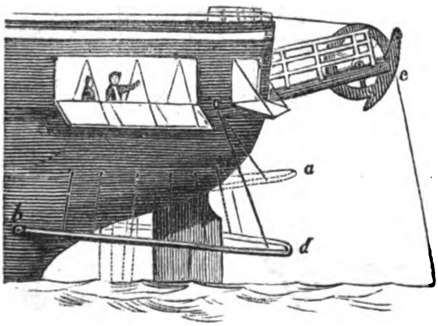
C—Coil in Hold.—Length, 1,075 miles. *B—Coil on Orlop Deck.*—150 miles. *A—Coil on Spar Deck.*—225 miles. *Total Miles on Board.*—In hold, 1,075. *d d d, &c.*—Rollers placed along the decks to steady the cable. *e*—Cable guard. *f*—Screw.

THE COILS, ETC., ON THE NIAGARA.

The subjoined engraving is intended to show the internal arrangements and apparatus for the coiling and paying out of the cable, and may be regarded as substantially accurate in its details. At first view there appears to be very slight difference between the two cable ships, but it will be seen that the number of coils on board the Niagara is about double the number on the Agamemnon, and that the coil in the hold of the former is not so large as that in the hold of the latter by several hundred miles. The strain on this part of the Niagara, therefore, was not so great, and she was consequently better able to withstand the effects of a heavy sea. The number of coils on the Niagara was seven, and of these five were placed in the fore and two in the after part of the vessel. The sheaves were placed over the bow as well as in the stern, and there were the same contrivances in the way of rollers and fair-leaders. The strength of each deck, or that particular part of it on which the cable was coiled, was increased by large iron trusses, which extended from one side of the ship to the other, and which were the best kind of substitutes for stanchions. The removal of a large number of these stanchions was necessary to make room for the coils, and the trusses were designed to answer the same purpose—that is, as supports for the decks. The hatches in the forepart of the ship were made the centre of the cable circles, so that when the coil was exhausted in one the cable was drawn up from the circle beneath through the cone, which was hollow, and which had an opening at the base and at the top. The machine was placed as near the stern as possible, to facilitate the process of paying out; the sheaves were secured and held in their places by strong wooden beams.

THE CABLE GUARDS.

Among the precautions which were taken to prevent damage to the cable is that of the stern guards, which were placed over the screw of each of the ships. These guards were to prevent it from coming in contact with the screws, in which case it is almost needless to add the cable would be broken. In 1857, they were secured to the sterns with strong iron bars, which it was supposed would withstand the pressure or resistance of the water when the vessel was under way. This, however, was proved by experience to be a fallacious idea, several of the bars having yielded and broke under the pressure. In view of this fact Mr. Everett decided on adopting another style of guard, which would answer the same purpose, and which would also be free from the difficulty to which the other was subject. A glance at the engraving will give a correct idea of that which was adopted.



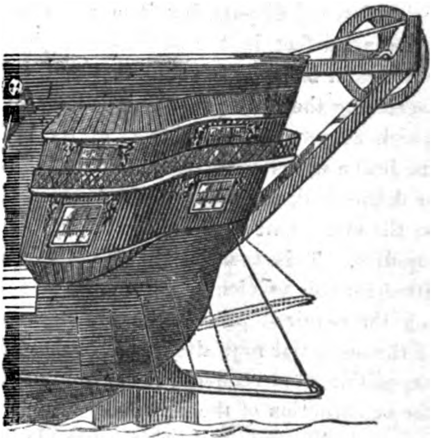
STERN GUARD OF THE NIAGARA.

This was a movable guard, and could be raised or lowered by means of the chains by which it was suspended. The hinge (*b*) was secured by

R HOISTING

a strong brass plate, which was fastened to the side of the ship with twelve copper bolts. The advantage of this movable guard will be readily appreciated. It could be raised to such a height when necessary as to entirely clear it from the water. Then it was intended, that if icebergs or other obstructions should render it necessary to back the ship, the guard should be immediately lowered, and lowered to such a depth as to prevent the cable being injured or broken by the screw. The length of the guard from the hinge (*b*) to the outer line (*d*) is 27 feet, and its greatest diameter athwart ships is 22 feet 6 inches. When hauled up, the extreme end (*d*) cleared the rudder-iron (*a*) about two feet. The stern sheave (*c*) over which the cable ran in its course before it reached the water was about four and a-half feet in diameter, and the groove at least five inches deep. A* guard kept the cable from surging and working out of the groove.

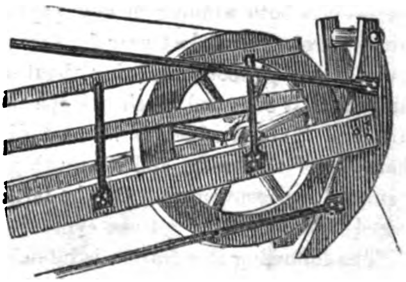
The Agamemnon, as may be seen from the following illustration, is provided with a guard similar to that on the Niagara.



*STERN GUARD OF THE AGAMEMNON.

A passage was left on either side of the wheel, to render it accessible when necessary, and this was rendered secure and safe by strong wooden railings, strengthened by iron uprights, the whole resting or constructed upon two massive beams, which ran in on the deck of the ship, where they were firmly attached.

The following engraving presents the stern sheave or wheel on a more enlarged scale.



SECTION OF THE STERN GUARD OF THE AGAMEMNON

It was intended to put a cage around the propeller, like that which was attached to the Niagara in 1857, but the preference was given to a movable guard, so that in this particular both ships were alike.

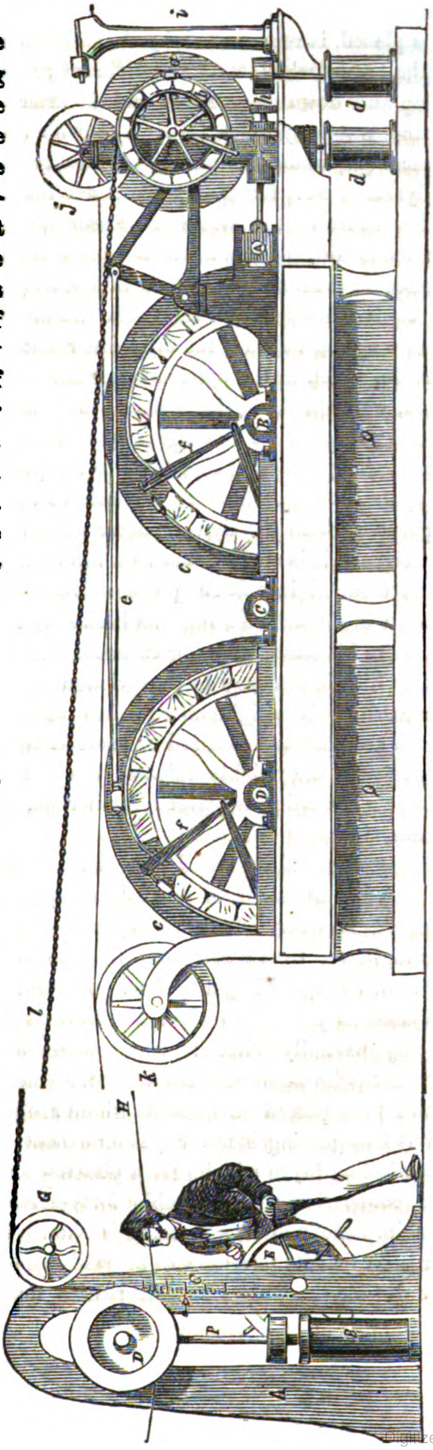
THE MACHINE THAT LAID THE CABLE,

CONSTRUCTED BY MR. W. E. EVERETT.

As the success of the enterprise depended mainly upon the construction of the paying-out machinery, and its adaptability to the work it was intended for, a detailed description of its various parts becomes necessary to a perfect understanding of the subject. To render the matter more easy of comprehension, we have presented in the accompanying illustrations not only the prominent features, but the minor details of the machine. Before proceeding, however, to the description, we wish to make a few preliminary remarks, for the purpose of showing the nature of the work which it has to perform. It is needless, almost, to state that the machine used on the expedition of 1857, was so imperfect that it caused the parting of the cable. That fact has been established beyond dispute, but it may not be generally understood that the principal defect in the machine was in the form of brake used. The object of a brake is to counteract or diminish the speed of the wheels by increasing the pressure. This is done by tightening the wooden blocks which surround the periphery of the brake wheel, and inside of which the brake wheel revolves. As this tightening or pressure is increased or diminished, the sheaves round which the cable passes, and which are on the same shaft with the brakes, revolve with increased or diminished rapidity. This, then, is the object of the brake; but the brake to be fitted for this particular work must be self-releasing, so that after reaching the required pressure it cannot exceed it. It was the entire want of this essential requisite in the brakes of the machine used on the first expedition, that rendered it not only useless, but fatal to its success. In the construction of the machinery which was put on board the Agamemnon and Niagara, and which was designed by and made under the direction and supervision of Mr. W. E. Everett, this point received particular attention. In the first place the machine subserves two purposes—it is both winding in and paying out—while two separate machines were required last year for these operations. In the second place it was not so cumbersome, being about one-fourth the weight; and in the third place it occupied much less space. But the most important feature, and that by which it is most distinguished, is the self-releasing character of the brake, and the much greater ease with which it can be regulated and controlled. Of the large number of engineers who witnessed it in operation, not one expressed an unfavorable opinion.

The following illustration is intended to give a rear view of the machine, to show the action of the brakes, the way the cable enters and leaves the sheaves or four grooved wheels (*c c*), which are but partially seen, and the object of the dynamometer.

The first glance at this engraving will show at once the great difference in the form of the machine, as compared with that used before. While the old paying-out concern consisted of four, this has only two wheels, each of which has four grooves, the grooves being each four and a half inches deep. The surging of the cable out of the shallow grooves that marked the periphery of the former machine proved the necessity of making these nearly twice as deep. This is one of the lessons that was gained by experience and judgment. The dynamometer is intended not only to show the strain upon the cable, but also to release the cable from that strain should the self-releasing brakes through any accident have been unable to perform their part. The iron framework, on which the



THE PAYING-OUT MACHINE.

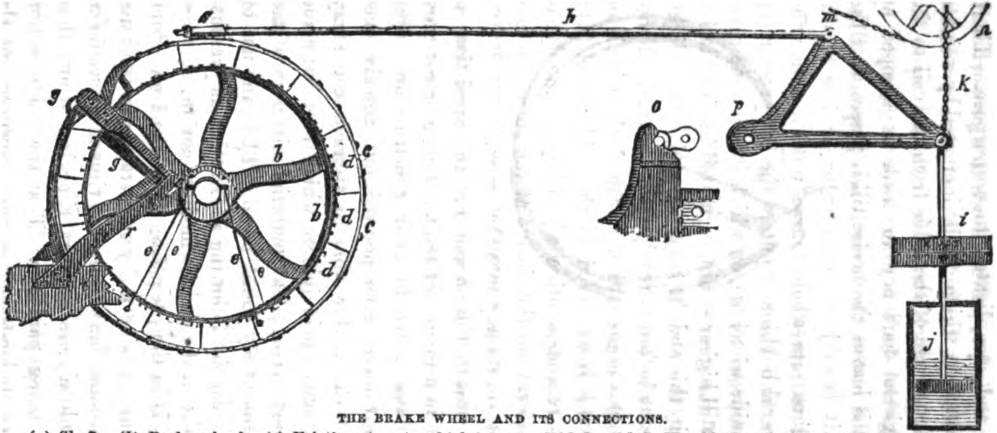
(*A*) main shaft connecting with steam engine. When the machine is to be used as a "winding machine," a pinion wheel is shipped on it, a gear wheel on (*B*) connected with (*D*) by a pinion on (C).—(*a*) The guide wheel on which the cable takes one turn, regulated by the friction wheel (*b*) and weights.—(*dd*) Water cylinders. The piston rod on which the weights are put works in this, the water preventing sudden shocks by releasing of friction band, &c.—(*b*) A guide to lead the cable fair into the score of (*a*), with four pounds compression.—(*ee*) Four grooved wheels.—(*f*) Levers compressing friction bands.—(*g*) Water tank in which friction straps and wheels are immersed to prevent heating.—(*h*) Screw for throwing main shaft pinion into gear.—(*i*) Pillar of the compressor.—(*j*) Guide wheel which acts in connection with the dynamometer.—(*k*) Guide wheel.—(*l*) Chain.

machinery is placed, is represented by A, and the process is easily explained by the letters which mark the different parts. The large pulley (D) moves up and down in grooves, and is attached to the piston (F) moving in the water cylinder (B). The cable (H) which passes from the guide wheel (K) under the pulley to another wheel on the opposite side of the dynamometer, forms an angle under the pulley that is rendered more or less acute by the strain or pressure produced by the brakes. The greater the strain, the less acute the angle becomes, and the higher the pulley rises on the scale (C). Now this scale (C) is marked or graduated from twelve hundred to thirty-six hundred pounds. It is, in fact, a sort of a spring balance, the only difference being in the graduating of the scale, which in the dynamometer shows a numerical increase as you ascend, while in the spring balance the numbers become greater as you descend the scale. The weights by which the strain is increased on the cable at this point in proportion to the pressure on the brakes, are placed upon the rest, which is seen above the water cylinder (B). The other purpose which the dynamometer serves is as follows: By a simple contrivance it is made to act as a means of releasing the brakes when they have failed in releasing themselves. The man who stands behind is shown in the act of using this brake releaser. The wheel (E) which he holds in his hand, by being turned to the right or left, tightens the chain (C) which is attached to the triangular shaped frame on the paying-out machine. The tightening or drawing on this chain raises the weights, which are attached to a rod or shaft at the end of this triangle, and by thus raising the weights releases the brakes from the pressure. This process is more fully explained further on, in the description of the next illustration.

The tanks (*g g*) are always well supplied with water, to prevent the heating of the brake wheels from friction, an operation which consumes about two gallons an hour. It was proposed to use oil, but as oil was not considered better than water, considerations of economy prevailed, and the latter was adopted in preference. Beyond the brake wheels are the grooved sheaves (*c c*) round which the cable is passed four times, but which are only partially visible. These sheaves are each six feet in diameter, while the brake wheels are not more than four and a half. On the shafts (B B) are placed gear wheels which are connected with a pinion on C; but this gearing is never put on except the machine is to be employed in winding in, in which case a pinion wheel is put on the main shaft (A) in connection with a double forty-horse engine on the port side of the ship. None of this gearing is shown in the engraving, for the simple reason that its purpose can be easily understood without illustration, and also for the no less forcible reason that it would only help to make the drawing confused and complicated to no purpose. There are four brake wheels, the pressure on which can be increased by weights to two tons and upwards. The passage of the cable from the coil to the sea is so arranged that the slightest tendency to kink is stopped at once. From the very moment it leaves the circles till it passes over the bobbins and on the machine, it is subject to a greater or less strain, which keeps it straight throughout its whole course until it enters the water. After passing over several bobbins, it enters the compressor (*i*), which carries it safely to the guide wheel (*a*), on which it takes one turn, and on which it is subject to a still higher strain, regulated by the friction wheel (*b*). The strain produced by this and the compressor (*i*) is very slight, and only helps to straighten it out before it reaches the sheaves. From the guide wheel (*a*) it passes into the grooves and around the wheels or sheaves four times, after which it is delivered to the guide wheel (*k*); then going under the pulley, it reaches another wheel beyond the dynamometer, from which it is transferred to the sheave at the stern, the last part of the machinery it touches on its way into the ocean.

Upon the operation of the brakes, the success of the expedition, as we have already said, depends in a great measure. The greatest care and attention have therefore been given to their construction. The defects of those used last year have been pointed out already, and out readers will consequently be the better able to appreciate the way in which these are planned. For the principle on which they are made Mr. Appold is entitled to some credit; but material alterations and modifications were required before they could be adapted to the use to which they have been applied. In the following illustration is presented a perfect representation of the brake and its mode of action.

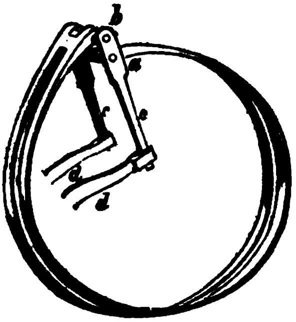
The shaft which is marked B in the preceding figure, and on which is placed the four grooved sheave, is shown by the letter *a* in the foregoing. The speed of the sheave and brake wheel is thus made uniform, a point which is of course absolutely essential in checking at any time the rate at which the cable is being paid out. That the simple action of the brake may be the better understood, we have, however, merely shown those parts which are necessary to that end, leaving out whatever would tend to complicate or confuse the drawing. The parts here presented are the shafts, the brake, the friction strap, the elm blocks, the levers, the connecting rods, the weights by which the strain on the cable is increased, the water cylinder, the chain connecting the shaft on which the weights are put, with dynamometer, portion of water tank, and a section of pillar to which the triangular part of the brake apparatus is attached. All of these may be easily distinguished by reference to the explanation at the foot of the engraving.



THE BRAKE WHEEL AND ITS CONNECTIONS.

(*a*) Shaft.—(*b*) Brake wheel.—(*c*) Friction strap to which is secured (*d d*).—(*d d*) Elm blocks; (*e e*) rods to relieve the upper part of friction strap of weights of lower part.—(*g g*) Levers.—(*h*) Connecting rod with weights (*i*) attached to friction strap (*c*) at (*s*).—(*j*) Water cylinder.—(*k*) Chain connecting weight with shaft (*l*) and wheel (*n*), to periphery of which is attached a chain connecting with the dynamometer in order to relieve the friction pressure.—(*o*) Pillar and shaft to which is attached (*p*).—(*t*) Portion of water tank.—(*r*) Lever stirrup or socket.—(*s*) Connection of rod and friction strain.

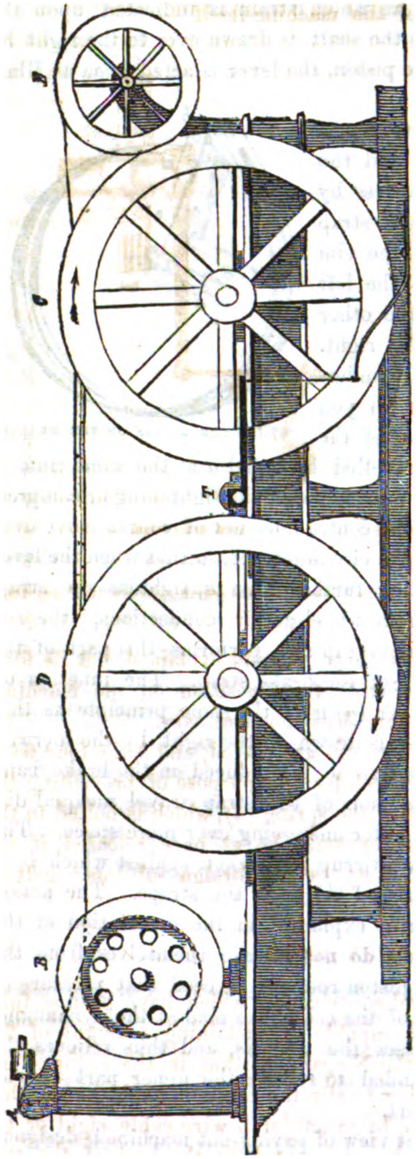
The periphery (*b*) of the brake wheel is twelve inches wide, and the whole, without the brake fixtures, is somewhat more than four feet in diameter. The shafts, as may be seen, are of a curved form, and the wheel is made of cast iron. On the periphery are the elm blocks (*d d*), which are bound together by a strong strap or band of iron (*c*). The blocks are secured by means of screws, the heads of which can be seen above the strap. The two ends of this strap, or band, are attached to the lever (*g*), which is held by the stirrup or socket (*r*). The tightening of the strap, and the consequent compressing of the elm blocks upon the periphery of the brake wheel causes it to revolve more slowly, and produces the same effect upon the sheave wheel over which the cable is passing. But while the brake wheel revolves the brake blocks are of course stationary, moving only sufficient for the purpose of compressing or releasing the brake wheel. The tightening or compressing is effected by increasing the weights on the piston, which can be raised to two tons if necessary. There are four brakes to the machinery, so that by putting ten hundred pounds on each piston the pressure can be increased to four thousand. Now as this weight is increased on the pistons, the pistons partially descend into the cylinder, pulling down to a proportionate degree the rod (*h*), which tightens the brake band (*c c*), thus producing the required strain upon the cable, which strain is indicated upon the scale of the dynamometer. As the shaft is drawn over to the right by the increase of weights upon the piston, the lever is acted upon as illustrated in the following:



SHOWING THE ACTION ON THE BRAKES.

The engraving is intended to represent the brake strap, the lever, and the stirrup. If you desire to compress by reducing the circumference of the strap (which is shown here without the elm blocks) you pull the lever (*c*) to the left hand, and by so doing move the other end of the strap (*b*) towards the right. This is a simple process and easily understood. As you pull on the lever (*c*) you draw upon the two ends (*b* and *a*) of the brake strap, but the distance travelled by *b* and *a* at the same time is not equal, and in this consists the principle of the tightening or compression. The end *a* being nearest the centre does not of course move over so much space as *b*, which is on the circumference, so that when the lever is moved, the end *b*, by travelling further than *a*, tightens the strap. But in the engraving of "the brake wheel and its connections," the rod (*h*) which is attached to the brake strap at *s*, performs this part of the operation—that is, the tightening of the brake strap. The junction of the ends of the strap at the lever (*g*) is on the same principle as that we have illustrated. As the rod is drawn to the right by the increase of weights on the piston, the same action is produced on the brake band as if the lever were used. The ends of the strap travel unequal distances, as has been shown, the outer one going over more space. The end of the lever is held in the stirrup or socket, against which it is pulled closer by the action of the rod (*h*) upon the straps. The action of the chain (*k m*) and wheel (*n*) is explained in the description of the dynamometer. When the brakes do not release themselves from the pressure of the weights on the piston rod, and exceed that pressure so much as to endanger the safety of the cable, the man at the dynamometer by a turn of the wheel raises the weights, and thus relieves the brakes. The rods (*s s*) are intended to relieve the upper part of friction strap of weight of lower part.

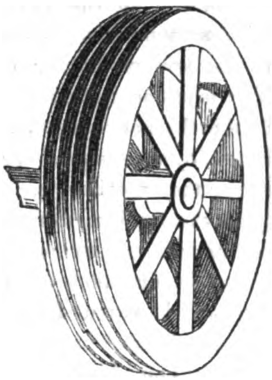
The following subjoined front view of paying-out machine is designed to show the sheave wheels, the guides, the compresser, and the scrapers, all the other portions being left out that these may be more distinctly seen:



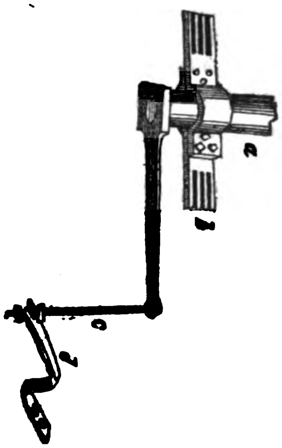
FRONT SECTION OF PAYING-OUT MACHINE.

The cable passes through the guide (*A*) on to a light sheet iron wheel (*B*)—placed for the purpose of steadying it on entering the groove of the large wheel—passes round (*C*) and back and under and over (*D*), thus making four half turns on each wheel—finally over the small wheel (*E*), thence under the dynamometer and over another wheel similar to (*G*) and overboard.

The cable first enters through the compresser or guide (A), takes one turn round the guide wheel (B), which is made of sheet iron, and which is governed and regulated by the friction wheel (*d*), and weighted as shown in the drawing of "the paying-out machine." From this it passes round C, and from C to D, and so on till it has passed four times over both, when it is received by the small guide wheel, from which it is transferred to the dynamometer. The scraper (T), which is secured on the shaft between the two wheels, is armed with eight teeth, four on each side, which fit into the grooves. These teeth clear out the tar as the wheels pass round, and thus prevent it from hardening and collecting in the grooves. The following is a representation of a sheave wheel, which will serve to give a clearer idea of its form and the form of the grooves than could possibly be given by a front view of the machine itself:—



A SHEAVE WHEEL SHOWING THE GROOVES.



THE SCRAPERS.

(a) Shaft.
(b) Fingers of scraper.
(d) Spring bolted to deck, to which is attached lever (c), but which releases it if any thing should overclog the grooves.

The object of the scraper has been already explained, but its form cannot be perfectly seen, on account of its position on the machine. The foregoing illustration, therefore, becomes necessary.

A is the shaft on which the scrapers are placed, and *b* the four teeth which enter the grooves of the wheel for the purpose of preventing the accumulation of tar. By means of the spring (*d*), which is bolted to the deck, and the lever (*c*), the scraper could be at once released, if the grooves were overclogged or filled up by any foreign substance getting into them.

THE CABLE BUOYS.

In addition to the mechanical contrivances which have been so fully described, two large buoys, each capable of sustaining a weight of five or six tons, were put on board the Niagara, so that in the event of her being obliged by stress of weather to slip the cable, it might be attached to this. This was to be effected by means of a wire cable eight or ten miles in length, one end of which was secured to the end of the submarine cable, and the other to the buoy, thus taking the great strain off it.

THE EXPERIMENTAL TRIP OF THE SQUADRON TO THE BAY OF BISCAY.

The 29th of May, the day on which the squadron sailed from Plymouth, on the experimental trip to the Bay of Biscay, was remarkably fine, and as there had been a continuous gale of some two weeks' duration, we entered upon the work before us with every prospect of a long spell of fair weather—a prospect in which we were not disappointed. Every thing necessary to the success of the trip was arranged two or three days previous to our departure. The machinery was in excellent working order, the buoys were provided with the necessary tackle, and the experience which the men had obtained by working at the cable proved of the greatest advantage in making the experiments. A consultation was had between the captains and the engineers of the company in regard to the point at which the vessels should commence their experiments, and after due deliberation it was decided that lat. 47, lon. 10, would be quite far enough. This is just on the verge of the Bay of Biscay, which bears such a terrible reputation for boisterous weather, and which it was supposed would afford every opportunity for testing the practicability of splicing and laying the cable in a rough sea, and under the most unfavorable circumstances. So lat. 47, lon. 10, was selected as the precise locality for the experiments. After leaving Plymouth Sound, therefore, the squadron made as direct a course as possible for this point. It was between four and five o'clock in the afternoon of the 29th of May when the four vessels got under way—the Agamemnon leading, the Gorgon, the Niagara, and the Valorous, following in regular succession. They started at a rate of five miles, and during their course out varied from that to a speed of eight miles per hour. The whole of Sunday no change was observed in the green color of the water denoting a greater depth, and the squadron kept on without making soundings. Monday, however, it had turned to a deep blue, showing that we had reached the great depths, although we had not yet arrived at the locality decided upon for the experiments. Signal was made by the Gorgon, under the command of Captain Dayman, to sound, and the whole squadron hove to to await the result.

We were now in latitude 47° 12′ N., long. 9° 32′ W., or about thirty miles distant from the point decided upon before starting from Plymouth, and, as it was subsequently shown by the soundings of the Gorgon, in 2,580 fathoms water. This, then, it was evident, was the place we were in search of, and it was determined that we should proceed to make our experiments at once. According to the memoranda drawn up by the engineers, the Niagara approached the Agamemnon within a convenient distance, when a line was passed in a boat to the Agamemnon, by which a hawser was hauled on board the latter, and by which also the two ships were fastened stern to stern. It must not be supposed from this, however, that they were actually in contact, for they were some seven or eight hundred feet apart, and as each vessel had steam up, there was no danger, with proper management, of their coming in collision. The two vessels now being firmly secured, the end of the telegraph cable was passed from the Niagara to the Agamemnon, where it was agreed the splice should be effected. The object of this experiment was to prove the practicability of accomplishing what is, or was considered, one of the most difficult operations of the whole expedition—the splicing and submerging of the cable in mid-ocean. The greatest interest was manifested on board our ship while the splicing was being performed on the Agamemnon, and every one was impatient to see the cable lowered from her stern, although the work was performed with praiseworthy celerity. It was about half-past five when the signal was displayed from that ship announcing that they were ready, and a few minutes after we could see the spliced portion hanging over the stern. Down it went until it disappeared below the surface, and the revolving cable wheel on the stern proved that it was on its way to the bottom, which lay at a depth of some twenty-five hundred fathoms beneath the ship. A length of cable having been paid out from the Agamemnon equal to the quantity used in passing the cable from ship to ship, so that the splice might be in the centre of the line formed by the cable between the ships, a flag was hoisted from the Agamemnon conveying intelligence of the fact to the Niagara. This was answered by a similar signal on the Niagara, when the two commenced paying out a quarter of a mile of cable each, at the rate of a mile an hour.

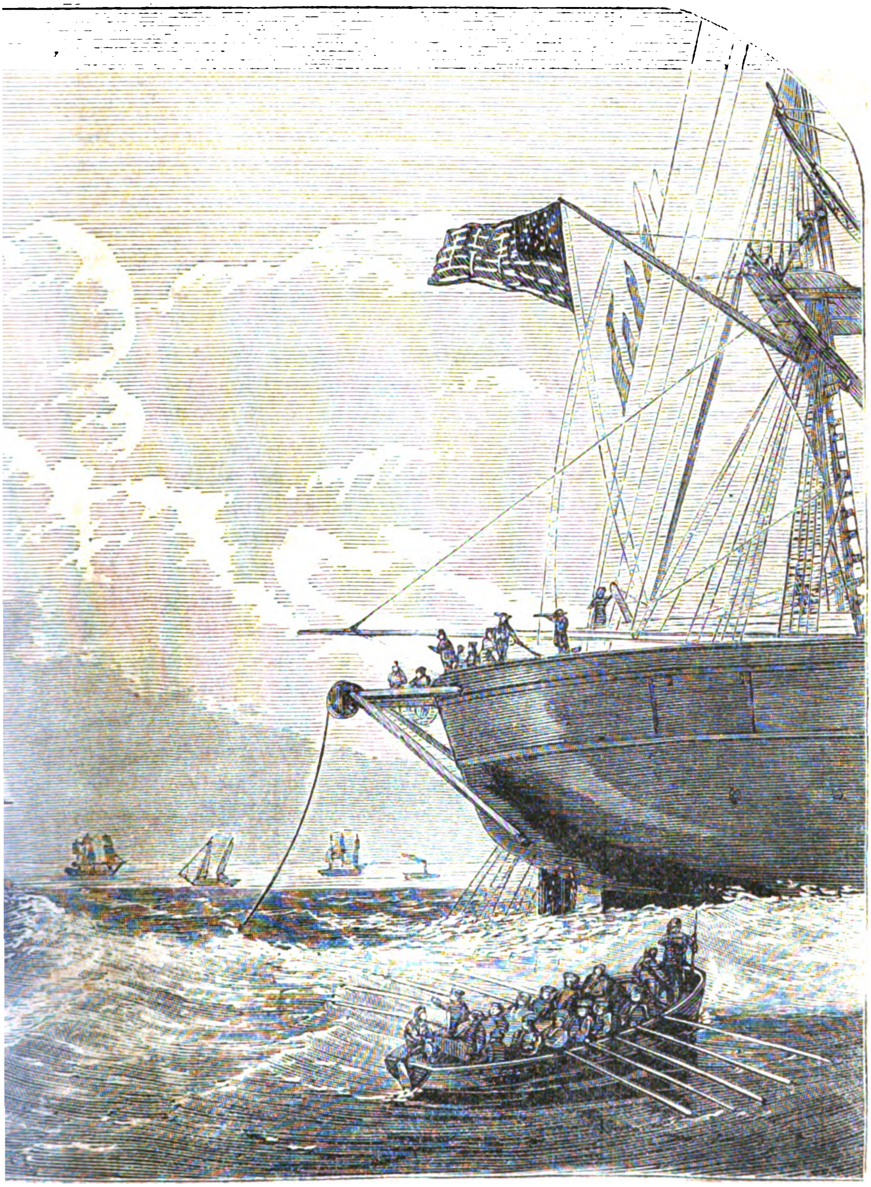
The cable used in this trial was a portion of that which had been laid last year, and which was much weakened by exposure. In some parts the outer wires, or protecting armor, was so oxidised, that the rust had rotted the hemp which covered the gutta percha. For this reason it parted several times during the experiments, but at the same time without interfering with their successful accomplishment.

A quarter of a mile, as has been stated, was paid out, and, in conformity with the "memoranda," the signals on both ships were hauled down, indicating that no more paying out should be done until they were again displayed. About ten minutes elapsed, when the flags were hoisted, and another quarter of a mile was let down into the sea at the same speed—a mile an hour. This process was repeated until a whole mile had been run out from the coil and over the machinery of each ship, making a total expenditure of two miles from both vessels. The process of paying out was performed by the engine connected with the machinery until the weight of the cable in the water was sufficient to turn the wheels. Mr. Follansbee, the chief engineer of the Niagara, had the engine under his charge all this time, and Mr. Everett took his stand at the dynamometer, where he regulated the pressure of the brakes. The Valorous and the Gorgon were obliged to play the part of lookers on, and with little profit or information, as they were of course entirely ignorant of the operations on board either of the cable ships.

While the first splice was being made, Captain Preedy, of the Agamemnon, sent the following despatch through the insulated conductor, to Captain Hudson—"We shall finish the splice in half an hour."

Throughout the experiments thus far the machinery answered our highest expectations, and proved its entire adaptability to the work. The brakes were under the most complete control, and the dynamometer, by showing the strain to which the cable was subject, placed it in the power of the man at the wheel to increase or lessen that strain as circumstances might demand or justify. In the expedition of 1857, the only difficulty was in the machinery. The wheels over which the cable passed would not revolve when required, and the strength of twenty men was exerted upon them in vain. Then the brakes, when put on, generally stopped the action of the whole machine, and brought a strain upon the line that was almost always fatal. Indeed, so patent had this fact become to all in the expedition, that it was doubted if a hundred miles of the cable could be successfully submerged, and the only wonder was that they had managed to get over three hundred miles out of the ship before it parted. Every one is agreed in regard to the qualities of the now employed paying-out machine. On that there is no difference of opinion, whatever there may be in regard to other matters connected with the Atlantic Telegraph enterprise. The strain, as indicated by the dynamometer, was equal to twelve hundred pounds, and this can be graduated from any amount between five hundred and fifty-five hundred, as the engineer in charge of the brakes may determine. It is now six o'clock, and the waiters have announced to the officers that supper is on the table; but it may be on or under the table just now for all any one cares; there is more interesting matter on hand, and until that is settled the supper may wait until it is cold. Looking at the cable as it comes out of the coil, passes over the paying-out sheaves, and descends from the stern, is the only thing worth attending to now, and the eager eyes of the sailors as they strain them in vain endeavors to see from the sides of the ship what is going on under the poop—an attempt to accomplish an impossibility—a sort of shooting-round-the-corner operation—proves only that the spirit of curiosity will try to surmount the most insurmountable obstacles. "Now it is going out grandly,"

PAYING OUT THE CABLE



RING THE TRIAL TRIP

some enthusiastic individual exclaims. A fact which a glance at both machine and cable proves beyond the possibility of a doubt. The machine revolves with the greatest ease; the indicator attached to it records the number of fathoms, and the cable comes out of the coil without exhibiting the slightest tendency to kink. Whatever speculations may be entertained about its kinking as it goes out of the ship, they are of very little account compared with the convincing ocular demonstration which is now presented. And this, too, is the experimental cable—the weakest, the most, imperfect, and the worst in every way on board the two ships. There is a number of men around the coil looking out for kinks, but they have not yet been able to detect a single one, and they may stop where they are for many hours to come before they will succeed. Captain Kell is overlooking this part of the work, and although about as wide awake as he can be, he can't see any thing. Lieutenant North, Lieutenant Macauly, Lieutenant Guest, Lieutenant Webb, Lieutenant Todd, Dr. Green, Dr. Hay, and all the lieutenants and doctors in the ship pay a visit to the coil, and they can't see a kink; and so it is concluded on board the ship that the thing that could be seen if it existed, can't be seen at all; "*argal,*" that thing consequently don't exist.

The supper has been an hour on the table before the officers think it worth while attending to, and then they go to work so slowly at it you would believe it was a subject hardly worth discussing. The experiments that have been made form the topic of conversation, and there is but one general expression of opinion regarding them, which is one of entire satisfaction. The supper is quickly despatched, and, as the experiments are still going on, the poop is soon occupied by a crowd of spectators. Over a mile of cable has been paid out from each ship (both vessels being still seven or eight hundred feet apart and connected by the hawser), and operations are suspended till it has had ample time to reach the bottom, which is 2,530 fathoms down. The dynamometer at this point shows a pressure of 3,200 pounds upon the brake, which is a strain of a little more than a ton and a-half upon the cable. While they are still waiting for the sinking of the line, the Gorgon comes alongside, and Captain Dayman, who stands upon her wheel-house, announces in his loudest tones that they have sounded again and got 2,530 fathoms. Now this is deeper than any soundings that have been had upon the Atlantic Telegraph plateau, and the experiments which are made ought certainly to be regarded as thoroughly testing the practicability of laying the cable between Ireland and Newfoundland, the two immediate points of connection. This, however, was satisfactorily tested and proved last year, although it may be well now to state the fact for the benefit of those who are still inclined to be sceptical upon the subject.

Agreeably with the terms of the programme, or memoranda of the engineers, as it is called, the next thing is to prove the practicability of hauling in the cable on board both ships. The engine is put in gear with the paying-out machine, the action of which is reversed, so that it can be used as well for the purpose of winding in. Every thing being in readiness, the process of hauling in was commenced. The ship was backed very slowly until the cable was "up and down," which means at right angles with the water, in which position it appears there is less strain upon it than in any other. The wheels revolved very slowly as the line was drawn on board, and half a mile of it returned to the coil from which it had been taken about an hour before. At this point of the process a message was received, signed Bright, stating that it was that gentleman's wish the operation should be suspended until he had time to make a "new splice." It took about three hours to accomplish this, and when the work was finished a message was sent to Mr. Everett, to the effect that "all was ready." The paying-out process was resumed on the receipt of this message, and by half-past ten we had succeeded in snbmerging two miles. The strain upon the cable, as shown by the dynamometer, varied from thirty-six to forty-one hundred pounds, while this length was suspended from the stern. Again the action of the machine was reversed, and the hauling in process repeated, at a rate of a mile an hour. This Mr. Everett considered the highest speed at which it would be safe to work the machinery, in consequence of the weakness of the cable, which, it must not be forgotten, had been previously condemned and set aside as only fit to make experiments with. It was intended, however, before the close of the trip to use the new cable for the purpose of testing its strength, and to settle the disputed point as to the practicability of taking it up, should it be found necessary during the final expedition. About a quarter to twelve this night the hawser which held both ships stern to stern parted on board the Agamemnon, and thus concluded the experiments for the first day—Monday, May 31.

Second Day's Experiments.

Although the cable which kept the Niagara and Agamemnon together had parted, the two vessels were still kept in about the same position, and the work proceeded with little or no intermission. Something more than a mile and a-half was hauled in, when word was sent from the office of the electrician on the maindeck that the continuity was broken. Still the hauling in went on successfully; and as that was the matter with which Mr. Everett had more immediately to do, little attention was paid to the loss of the electrical continuity. Besides, it was the imperfect cable we were using, and it was never supposed that it would be of much service, if any, for electrical experiments. The hauling in, therefore, was continued till about half-past two A. M., when the end of the cable came up over the stern. Of the whole length paid out not more than one hundred and ten fathoms were lost. This concluded the experiments till after breakfast, when they were commenced with renewed energy.

At a quarter to nine A. M. a new hawser was passed from the Niagara to the Agamemnon, and both ships attached in the manner already described. The two ends of the cable were again spliced, and a quarter of a mile paid out from each ship, after which the hawser was released. Up to this time they had not allowed the cable to pass out of the Niagara faster than a mile an hour; but a change was now to be made in this respect, and it was concluded to see the effect of a more rapid movement of the machinery and an accelerated speed in the paying-out process. Two miles of it were permitted, in the language of the engineer's report, to "run quite freely," when the speed was gradually checked while an additional mile and about four hundred fathoms were being submerged. The ships were under way from the time the hawser was released, and continued moving, though at a comparatively slow rate, most of the time the line was passing out. It was now about half-past ten, and three miles had been transferred from the ship to the sea in the most satisfactory manner, as showing the admirable working of the machinery, and the ease with which it could be controlled. There was one point, however, which was not so satisfactory, and which it was seen would require the attention of the engineer before the departure of the ships on the final expedition. This was the excessive accumulation and hardening of the tar in the sheaves, which it is rightly feared may endanger the safety of the cable if some provision be not made in time. The necessity of making such provision as will obviate the difficulty is fully appreciated by Mr. Everett, who will devise some means by which it will be altogether prevented, or so counteracted as to render all danger therefrom a matter of impossibility. If the experimental trip made only this difficulty obvious, it was worth all the time and money and labor which have been expended. The accumulation of the tar in the grooves of the pulley or indicator of the dynamometer, and the grooves of the wheel leading to the stern, rendered the use of a scraper absolutely necessary to keep them clear. A man was accordingly appointed for this work; but while cleaning the groove of the indicator wheel, the tar was so hard and so thick that it broke the scraper, and forced it into contact with the cable, which was almost immediately severed at the point of contact. Here, then, was an additional experience of the greatest value in the successful accomplishment of the undertaking. It was made manifest, by the accumulation of the tar in the grooves, that some plan should be devised to obviate any difficulty from such a cause, and it was also shown that it was unsafe to trust a scraper in the hands of any man for the removal of the tar. The scrapers which were placed on the paying-out machine to keep the tar from collecting in the grooves of the sheave wheels are just the thing, but the abrasion and consequent wearing to which they are subjected will render an abundant supply of scrapers indispensable.

After paying out the length of cable stated (over three miles), the engineer gave the order to reverse the machine and to wind in. This was but the work of a few minutes, and soon after the order was given it was carried into execution. Not more than two hundred fathoms had been recovered from the sea before the line parted, and from the cause referred to.

The new cable was now brought into requisition for the first time, and the Agamemnon having been signalled, the ends were spliced as before in the case of the experimental line. At a quarter to five the wheels of the machine began to revolve, and by six, two miles and a half of cable were paid out, when a signal was observed on the Agamemnon conveying the unwelcome intelligence that it had parted. This, it was afterwards understood, was caused by a change which had been made in the paying-out machine of the Agamemnon, under the directions of Messrs. Bright and Canning. The wheel leading on to the machinery was made of cast, instead of sheet-iron, and was consequently much heavier and less adapted to the work for which it was designed—simply to act as a check in preventing the too rapid passage of the cable on the paying-out sheaves. Its unfitness for the purpose became so clearly apparent from this mishap—or fortunate accident, we should perhaps say—that it was at once removed, and the sheet-iron wheel, similar to that on the Niagara, substituted.

As nothing further could now be done in the way of paying out, it was concluded to haul in, and by half-past nine the whole of our portion of the cable was recovered. A glance at the indicator or dynamometer showed a strain of a little over two tons and a half, while the first quarter of a mile was passing over the stern sheave.

Third Day.

The last experiment which was to settle the practicability of buoying up the cable, was set down for this day. To appreciate the value of this experiment, it is necessary to know that serious fears were entertained about the capability of a buoy to retain its hold upon the deep sea line when exposed to the action of the sea in a gale. The force of the waves, it was urged, would act upon it in such a manner as to cause it to give way at the point where it is joined, or some other part of the cable that may be subject to the greatest strain. An immense buoy, shaped somewhat like a segar, capable of sustaining five or six tons, and sixteen or eighteen feet in length, was put on board of each ship. This was now brought into use on board the Niagara, and attached to the cable after three and a quarter miles had been paid out. Away it went from the side of the vessel, and the moment the weight of the cable suspended from it was felt, it assumed an erect position, about two-thirds or ten feet of its length appearing above the surface of the water. A smaller buoy, called the watch buoy, had been attached to it by a rope, and the two floated off from the Niagara, which continued paying out the cable until it gave way again at a part which inspection showed was completely destroyed by the rusting of the outer wire. This occurred about half-past nine A. M. At half-past ten the watch buoy was taken up, and the ship was proceeding in the direction of the cable buoy for the purpose of hauling it on board, also, when it was observed falling from its erect position, and lying its whole length on the surface. There was only one explanation for this. The cable had parted, and the buoy relieved from the weight of it, assumed a recumbent state. When taken up, it was observed that the three and a quarter inch rope-stopper had been cut off by the working or abrasion of the cable.

This was the last experiment on the memoranda, as we have said, but it was agreed to try another before starting for Plymouth. There were some miles of experimental cable left, and as it was desirable to know how fast the wire could be laid with safety, it was concluded to employ this with that view. The engine was set to work in submerging a sufficient length or weight of it to put the wheels in motion so that the machinery would work of itself. Less than half a mile of it was submerged in this way, when the engine was detached; the paying-out wheels, being subjected to the weight of the submerged portion, commenced revolving, and as a comparatively slight pressure was put upon the brakes, the cable went out at the rate of between seven and eight miles an hour, without exhibiting the least tendency to kink. Nothing could be more satisfactory or conclusive than this last experiment, as showing the high speed at which the line can be submerged with safety; and should it be adopted by the engineer, we shall accomplish the laying of our half of the three thousand miles in somewhat less than six days.

As there was nothing more to be done, the Telegraph Squadron made as direct a line as possible for Plymouth, where it arrived at six o'clock on Thursday, the 3d of June. During the passage the Agamemnon attempted another trial of speed with the Niagara, but with no better success than she had last year. She was, in fact, rather badly beaten, and had her new commander, Captain Preedy, only known the qualities of the Niagara, he would hardly have risked another defeat. Nothing like one's own experience, however.

Report of Mr. W. E. Everett in regard to the paying-out machinery and the submerging of the Cable.

UNITED STATES STEAM FRIGATE NIAGARA,
At Sea, June 3, 1858.

CYRUS W. FIELD, General Manager of the Atlantic Telegraph Company:

SIR:—For the information of yourself and the directors, I submit the following statement of experiments made during this trip.

Monday, 4 P. M., May 31, lat. 47° 12′ N., lon. 9° 32′ W., soundings 2,530 fathoms, this ship and the Agamemnon being attached stern to stern by a hawser, 180 fathoms of cable were veered out for the end to be taken on board that ship to be spliced. At 5·30, signal being made "all ready," in accordance with previous arrangement, one mile of cable was veered out. We then commenced hauling it in. At 6·30 had recovered half a mile, when Mr. Bright's message was received saying he desired to make a new splice. At 9·40 received message "all is ready," and again commenced paying out as before. At 10·34 P. M., two miles were out. After this amount was paid out, the strain upon the cable was 3,600 to 4,100 pounds. At 11·28 commenced hauling in, but very slowly, as the strain nearly approached the breaking point of the rope. At 11·45 the hawser securing the ships together parted on the Agamemnon, but the ships were retained nearly in the same relative positions by working the engine when required. At 1·40, having hauled in one mile 506½ fathoms, the continuity was reported broken. We continued to haul in until 2·15, when the end came, having lost of the two miles paid out 110 fathoms.

On Tuesday, at 8·40 A. M., the ships having been secured and splice made as before, a quarter of a mile was paid out, hawser released and ships started ahead slowly, at the same time the cable was allowed to run quite freely until two miles had been paid out, when a gradual restraint was applied until an additional one mile 387 fathoms had been paid out, making in all three miles 387 fathoms. At this time (10·23) commenced hauling in, and had recovered 190 fathoms when the cable parted. At 4·44 P. M., the two ends of the new cable having been spliced, we paid out 2½ miles at a rate which had been previously agreed upon, the electricians passing signals through the whole length of cable. At 6·15 P. M., the Agamemnon made signal the cable was parted. We at once commenced hauling in, the strain running up to 5,100 pounds during the receiving of the first quarter of a mile. At 9·20 the end came in, having lost 80 fathoms of the 2½ miles paid out.

Wednesday, June 2, at 7·30, experimental cable was again spliced, one quarter of a mile paid out, hawser released, and the ships started ahead. In a few minutes the Agamemnon made signal cable parted. We continued to pay out until 3½ miles were out. The ship was then backed, large buoy and watch buoy attached to the cable. Ship again run ahead, and when 300 fathoms had been paid out the cable parted on the machinery. The ship then made for the buoy with the hope of recovering the end of the cable; but while hauling in the watch buoy, the large buoy suddenly fell over, showing it had separated from the cable. Upon recovering it we found the rope-stopper (3½ inch rope) had been cut off by the cable. At 12·55, by the request of Mr. Woodhouse, we paid over the end of experimental cable, to ascertain how rapidly it could be run off the coil with safety, but no greater speed was attained than seven knots, as the cable was being often stranded on the machine by the accumulation of tar in the grooves, which was so hard that no scraper could be made to remove it at any speed. All the cable used to-day was that brought from Greenwich expressly for experimenting, and was long since condemned. Undoubtedly it has been much exposed to the weather, and stowed where considerable sand or dirt has been thrown upon it. With the cable which was recovered last year, and used by us during the experiment, we had no serious difficulty in keeping the tar out of the grooves, it being comparatively soft, though the amount was beyond what I could have believed. The amount of tar on this cable is much greater than that upon the cable intended to be laid down, therefore I believe we can make such provision as that it shall not become a serious obstacle.

The result of this experimental trip has demonstrated that we have the capability of hauling in the cable to a greater extent than I had expected. Not that I believe any great distance could be recovered, but in the general depth of water where the cable is to be laid, in good weather, should a fault go overboard before the ship could be stopped, I am of the opinion sufficient of the cable may be hauled in to remedy the fault.

The operation of the machinery generally is certainly satisfactory, and there is no alteration I can suggest other than in the tar scrapers, which will require modification. The amount of tar accumulating is so much beyond what could have been expected from last year's experience, owing to the repeated coatings it has received since it was unloaded from this vessel last October, that extraordinary provision will be required. As regards the attaching of buoys, we can attach them, but at a great risk of breaking the cable, and they should not be used in deep water except as a last resort.

The arrangements for coils, provisions for leading the rope, and all the other many particulars incidental to this work, which have been under the direction of Mr. Woodhouse, do not require any alteration, and fully meet the requirements. I am, respectfully, your obedient servant,

W. E. Everett.

THE SAILING OF THE SECOND, OR THE UNSUCCESSFUL EXPEDITION OF 1858.

The Telegraph Squadron arrived, as has been stated, at Plymouth, after the experimental trip on the 3d of June, and having received a fresh supply of coal, started for mid-ocean on the 10th of the same month. The point in mid-ocean which had been decided on as the place of rendezvous was in lat. 52° 02′, long. 33° 18′.

Each vessel had about fifteen hundred statute miles of cable on board, making a total of three thousand, or a little more than fifty per cent. over the distance to be traversed by both. The weather had been very fine, and there was every appearance that it would continue so for some weeks. In fact, the summer had now fairly set in, and we felt hopeful in the assurance given us by Lieutenant Maury, that the month of June was the mildest of all the months in the year. We now looked forward with the most sanguine expectations to the time when we should land our end at the Newfoundland terminus, and with swelling hearts thought of the enthusiastic welcome which we knew would greet us when we returned to the commercial metropolis of the Union, after the successful accomplishment of the greatest work which has ever been conceived or attempted by the genius of man. The Sunday before our departure we were visited by a friend from New York (Rev. Henry Field), who told us with what interest and anxiety our people regarded the enterprise in which we are engaged, and how eagerly they awaited the moment when the first despatch from Newfoundland should apprise them that the cable was laid. That Sunday he preached a most appropriate sermon, in the course of which he made frequent reference to the great enterprise, and to its importance not only in a material but in a moral point of view, as bringing the nations of the earth into more intimate relationship with each other. The scene was certainly one that will not be forgotten easily, and the words of the preacher made a deep impression on the minds of his hearers.

On the 10th of June, as has been stated, we left Plymouth about ten o'clock in the morning, and took the direct course for the point of rendezvous, the four ships sailing in company. The Porcupine, which was the smallest steamer in the squadron, had been sent to St. John's with orders to meet the Niagara on her way to Trinity Bay, so that besides our own vessel and the Agamemnon there were but two others, the Valorous and Gorgon, the last of which was to act as our escort. There was no public demonstration at our departure, and with the exception of a few of the members of the company and their friends, there were none to bid us farewell. In a few hours we lost sight of the landmarks along the coast, and Eddystone light, which stands upon a reef of rocks out in the channel, and about seventeen miles from Plymouth, was rapidly disappearing below the horizon. About eight o'clock the land, which was gradually becoming more indistinct, was lost amid the evening shadows, but we could still see through the hazy twilight objects at the distance of four or five miles. For the two following days the weather continued very fine; but on the third, (Sunday, June 13,) the wind, which in the morning was moderate, freshened considerably towards evening, and at night blew a perfect gale. We were not a little surprised at this, especially as we had been led to believe, from the statements of those who were supposed to know something about the subject, that we were to have had nothing but gentle breezes and smiling skies. The delusion, however, was very soon dispelled, and before the end of the gale we were pretty well tired of our sea experience, and sighed most earnestly for what some poet songster, in an unaccountable fit of enthusiasm about the ocean, has called the "dull, tame shore." It was certainly a most severe gale; but in the Niagara we could not realize its severity, and it was only when we came to hear what wild work it was nearly making with the Gorgon and Valorous, and did make with the Agamemnon, that we began to have a proper idea of its true character. During the gale we had our spritsail yard and flying-jibboom broken, and the same sea by which this damage was done dislocated the right, or, as the sailors call it, the starboard wing of the American eagle, which forms the figure head of the Niagara. The injury, however, was repaired on the first opportunity, and the national bird restored to his pristine beauty and strength. It may be interesting to know that his mate on the stern, another terribly warlike-looking fellow, had not a feather ruffled, and looks as terrible and as warlike as ever. This was the only damage inflicted upon the ship by the gale; but the fearful havoc it made among the domestic utensils of the ward-room, and particularly those of a brittle kind, would have gladdened the heart of a dealer in crockery.

On the 19th of June we had a heavy sea and some bad squalls. The barometer fell as low as 28, and stuck there with such obstinacy as to render it doubtful whether it would ever rise again as high as 30. Each day was but a repetition of the day before, and the log-book was one unvarying record of the same particulars. One day it was "blowing heavy in squalls," and the next day it was "blowing heavy in squalls," and the only change was at the end of the gale, when the reader was informed there was "a fresh gale" and "heavy sea with squalls." We had managed to keep the Agamemnon in sight till Monday, June 21, when we lost her about 7 o'clock in the morning. The sea was heavier than we had yet seen it, and we found it impossible on that account to run down to her, as we were frequently obliged to do, in consequence of her drifting so rapidly to leeward. We were actuated in this solely by considerations for the safety of our own ship, which would have been much endangered by attempting to follow her under such circumstances. On the evening of the 21st of June, the wind moderated; the barometer began to rise rapidly, and there were other pleasant indications of an agreeable change in the weather. As the barometer rose the sea fell, and the following day, according to the stereotype phrase, was "all that could be desired." We had been buffeted about long enough, and were driven nearly three degrees further north than we wished, having drifted to lat. 54° 30′, when we never intended to go higher north than lat. 52. So much for the operations of the gale. We now set out for the rendezvous, and arrived there on the afternoon of the 23d, when we found the Valorous and Gorgon there before us—the former having reached it on the 21st, and the Gorgon on the morning of the 23d. An officer came on board from the Valorous, and informed us that they, too, had had very bad weather, and that they had not seen the Agamemnon since the 13th. We were also informed that the Gorgon nearly lost both her masts, and the Valorous her quarter boats. Captains Aldham and Dayman said that it was the worst weather they had ever experienced in the North Atlantic.

This night a thick fog set in, in which we lost sight of the two escorts. The next morning, at five o'clock, Lieut. Guest, who was officer of the deck at the time, spoke a packet ship bound from Liverpool to New York. She was not in sight more than ten minutes, on account of the fog, and had she not been quite close to the ship it is doubtful whether she would have been seen at all. When Mr. Guest first saw her she was looming up through the fog.

"Where are you bound for?" said he, as soon as she came near enough to speak her.

"To New York," was the answer.

"Please to report the United States frigate Niagara."

"Aye! aye!" responded a voice which it is supposed belonged to the captain; and he immediately asked in turn: "Where are the other vessels?"

"In company around us," Mr. Guest replied.

It was supposed by this time that the other vessels and the Agamemnon were close at hand, although not visible in consequence of the fog, and it was under this impression that Mr. Guest answered as he did. There was no time for a more lengthened conversation, and the object was to make it as laconic and as much to the point as possible. The last answer was received by the captain with a wave of his hat, to which a similar pantomimic return was made, and both vessels lost sight of each other almost immediately after.

Before the close of this day we had another gale, during which it blew in heavy squalls. The morning of Friday, June 25th, however, broke clear and pleasant, and about two o'clock in the afternoon, we saw the Valorous, the Gorgon, and the Agamemnon, all on the rendezvous. At half-past four o'clock we received a visit from Captain Preedy, from whom we learned that he had reached the rendezvous at twelve o'clock. He also reported severe weather, and said that during the gale, of which we have already spoken, the upper part of the main coil, which contained a thousand miles of cable, had shifted, and that for some time they were in a very perilous condition. About a hundred miles had to be removed and coiled on another part of the ship; and as soon as the coiling of this was finished he would be ready to make the splice and commence the work of paying out. Some idea of the effects of the gale on the Agamemnon may be conceived from the fact that the strain to which she was exposed by the great weight and peculiar nature of her cargo, opened her water ways about two inches and a half. The water ways are that part of the ship where the deck and the sides are joined, and when they part to any great extent, the vessel is considered in a dangerous state. Captain Preedy finding it impossible to keep the ship's head to the sea, on account of the shifting and working of the cable in the main coil, determined to scud before the gale, which he was obliged to do for thirty-six hours. The scene on board was reported to have been fearful. The ship rolled very heavily, and at one time nearly every man on deck was thrown off his feet; one man, a marine, was literally frightened out of his wits, and was crazy for some days. One man had his arm fractured in two places, and another had his leg broken. Every eye was turned on Captain Preedy, who, fully aware of the imminence of the danger, exhibited the greatest coolness and self-possession, and finally succeeded by his admirable seamanship in saving his vessel. It was peculiarly gratifying to see him once more, and to know that he was ready to go on with the work. In the midst of the fearful scene that took place on the Agamemnon a rather ludicrous incident occurred, which must not be omitted. One of the landsmen, who, it would appear, had very little experience of the sea, had not been seen for a long time, and his friends, anxious about him, searched all over the ship in their endeavors to discover his whereabouts; their efforts, however, were unsuccessful, and they were just giving up all hope of ever seeing him again, when some one suggested that the bread closet had not been looked into. The idea of his being in such a place was treated with contempt, but it was decided, however, to take a peep at it. The door was accordingly opened, and there, snugly ensconced in a corner, was the individual who had caused all the anxiety and trouble. It was never discovered why he went there, but some people are uncharitable enough to say that he had designs upon the provisions.

COMMENCEMENT OF THE WORK.

SATURDAY—JUNE 26.

The state of the weather was most propitious for the beginning of the work, and we all felt anxious to see the splice lowered into the water. It had been agreed upon that it should be made on the Agamemnon, and that as soon as they had begun to pay out a red flag should be hoisted as a signal that we should do the same. The splicing was one of the most important and at the same time one of the simplest operations connected with the work of laying the cable. The process may be divided into three distinct branches—the joining of the copper core or conductor, the insulation with gutta percha, and the splicing of the outer protecting wire. The gutta percha is stripped off the conductor to the length of about two inches on both ends, which are laid over each other, and bound with copper wire, as is seen in figure 4 of the annexed engraving:

Fig. 1.

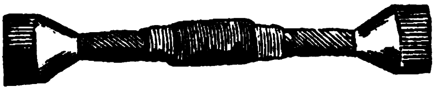


Fig. 2.

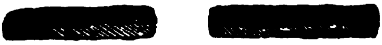


Fig. 3.

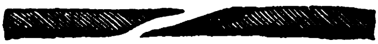


Fig. 4.

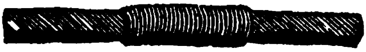


Fig. 5.

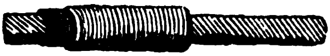
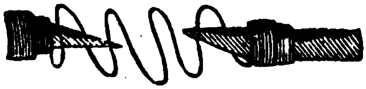


Fig. 6.



Over this again is laid another binding of copper wire, and the soldering repeated, so that the part which is spliced by being thus strengthened is made stronger than any other. This double binding is seen in figures 1 and 5, the ends having been previously prepared as they appear in figures 2 and 3. The great advantage of this manner of splicing will be at once perceived by reference to figure 6, which shows that in the event of the rupture of the splice the connection is still kept up by the single wire, which in this case being in contact with the several ends preserves the electrical continuity. Should there be any so skeptical as to disbelieve this, it ought to be sufficient for them to know that were the wire eleven times smaller than the small strand of seven wires which form the core, its power as a conductor of the electrical current is reduced only one thirty-seventh part in a whole mile. The splicing is completed by the insulation of the core with three layers of gutta percha, each of which is about as thick as ordinary foolscap. Layer after layer of this is laid on till it is brought to a uniform surface with the rest of the gutta percha insulation, after which the outer protecting wire is laid on and bound in a somewhat similar manner to the splicing of the conductor. To the splice when thus formed is attached a crescent-shaped piece of wood, about eight feet in length, through a groove, in which the cable is placed, and in which it is secured by a flat piece of sheet-iron of the same length and form as the wood. The spliced portion is in the centre of the wood, but to prevent any strain upon it a strong iron-bound loop is made of the cable at either end of the crescent, and these two loops are afterwards fastened by an iron shackle, which takes all the strain off the splice. This operation took about two hours, and the moment it was finished the hawser which held the two vessels was released, and the process of paying out commenced. The continuity was tested by the electricians and found to be perfect, and we had submerged something like two miles and a half of the cable when it parted on the machine. The cause of its fracture in this instance was very simple, and by proper attention might very easily have been avoided. The cable was allowed to run on the machine too slack, so that the leading on part of it got into the wrong groove, and in the endeavor to put it back into its proper position it was thrown off the wheels altogether, and, falling down on the tar scraper, was broken. The break of continuity was soon discovered on the Agamemnon, and both ships immediately returned and made a new splice, when the work of paying out was once more resumed. This time there was no running of the cable into the wrong groove, and the utmost caution and vigilance were exercised over the machinery. About half-past six nearly ten miles were paid out from both ships, and at eight the two vessels lost sight of each other. The electricians were at their post, and reported the continuity "all right." The cable was going out at the rate of five and six miles an hour, while the speed of the ship varied from four to five, so that by midnight thirty-one miles had been submerged. This certainly looked like work, and augured favorably for our success. Our hopes, however, were destined to be shortlived, for about ten minutes to 1 A. M. of the following morning the continuity was destroyed. How this was done could not be satisfactorily explained, but the general supposition on board the ship was that it was caused by the parting of the cable on the Agamemnon.

SUNDAY, June 27.—The continuity, as has been stated, ceased at ten minutes to one o'clock this morning, and after about thirty-one miles of cable had been paid out. The vessels had long since ran out of sight of each other, and it would, perhaps, require another day before they could return to the rendezvous. After the electric communication was severed the speed of the ship was reduced to less than two miles, and the cable paid out at a proportionate rate for three hours. This was considered a sufficient length of time to allow for the probability of its returning; but being now thoroughly convinced that it was gone forever, the action of the machinery was reversed, and they commenced winding in. About a hundred fathoms had been recovered when the cable parted, the amount lost in this second attempt being forty-two miles and 300 fathoms. The Gorgon was informed by signal of the disaster, and both vessels proceeded on their course to the rendezvous. The ill success which had thus far attended the expedition was very discouraging, and as we were altogether ignorant of the cause of the loss of continuity we were growing very doubtful about our chances of success. Some were under the delusion that the difficulty was created by the brakes, the prejudice against which still existed from the first expedition, when the cable was broken by the defective machinery; but this part of our paying-out machine was perfect, and realized all the expectations that were formed of it. It was impossible, however, to disabuse the minds of those who had conceived this prejudice of its injustice. It was their belief that the weights on the brakes, which never exceeded nineteen hundred pounds, produced a heavier strain than the cable was calculated to bear, and that it stretched until the inner core or electrical conductor parted, thus destroying the continuity. Finding prose too dull and heavy to express their feelings on the subject, they invoked the aid of the muse, and gave vent to their feelings in the following remarkable piece of composition:

Pay it out, oh! pay it out,
  As long as you are able;
For if you put the darned breaks on,
  Pop goes the cable.

It was intended to be a parody on the popular song of "Pop goes the Weasel," but after one verse the muse became exhausted, refused to get off another, and literally broke down. The brakes were put on in a poetical sense, and the composer found that he could not continue to "pay it out."

The Alice Munroe, a packet ship bound from Liverpool to Boston, was spoken about ten o'clock this morning, and a boat sent out with Mr. Field and Lieutenant Gherardi. Mr. Field gave a brief account to the captain of the proceedings of the expedition. He was also entrusted with a large number of letters to be put in the Post Office on his arrival in Boston, in the hope that our friends would hear from us before we could reach Newfoundland. A few hours after, the Alice Munroe was out of sight, and we resumed our course for the rendezvous.

MONDAY, June 28.—We were on the look out the whole morning and a portion of the afternoon for the Agamemnon and Valorous, and as there was no appearance of either of them, we felt somewhat apprehensive about seeing them at all this day. The Gorgon was also out of sight, but we naturally supposed that she was cruising around in the hope of falling in with one or both, as they very seldom lost track of each other. The weather was every thing we could desire; the sea was comparatively smooth, and it was just the very time to make a splice. The ill success of our two first attempts, it is true, was rather discouraging, but it was resolved that as long as we had sufficient cable to justify us in trying again and again, and sufficient coal with which to make the passage from the rendezvous to each side, we should not abandon the expedition. The failure which attended the first was purely the result of an accident, but it was very different with the second; and as no satisfactory or reliable explanation could be given as to the cause, our confidence in the ultimate success of the undertaking was terribly shaken. Various were the surmises and conjectures in regard to the subject. One was of opinion that too great a strain had been put upon the cable, and that either while on its way to, or resting on, the bottom, the conductor parted and the continuity was thus destroyed. Another believed that it was cut by lying on the top of a sharp rock; but the fact that the soundings both of Lieutenant Berryman and Commander Dayman prove that the bottom on this part of the plateau consists of ooze, is a sufficient refutation of this theory. Mr. De Santy, one of the principal electricians, expressed his belief that the cable was broken on board the Agamemnon, while his associate, Mr. Laws, thought it had given way near the splice. Our anxiety to have this disputed point settled by the appearance of the Agamemnon became painfully intense, and the feeling was rather increased than diminished when she made her appearance. We had made up our minds upon two points—first, if the cable parted on the Agamemnon, the prevention of such an occurrence might be found in the increased vigilance and carefulness of those having charge of the work; second, but if it gave way on the bottom our ignorance of the cause must consequently render us totally unable to provide against it. What, therefore, was our dismay, when we heard from the Agamemnon that the break had not taken place on board that ship, and that they had supposed it happened on the Niagara. But this is anticipating, and we will, therefore, proceed in the regular order of our narrative.

The Agamemnon hove in sight at two o'clock in the afternoon, in company with the Valorous, and about two hours after the Gorgon became visible. There was no mistaking the line of battle ship, with her heavy massive hull looming above the horizon, as she was driven forward under an immense cloud of canvas. Nearer and nearer she came, until her two long white streaks could be plainly distinguished, and in little more than an hour from the time she was first seen she was within a few hundred yards of our ship, exchanging signals with us. The following question was asked from the Niagara as she came near enough to read our numbers:

"How did the cable part?"

To which she replied—

"The cable did not part—current ceased."

Thus were our worst fears realized—it must have given way on some part of the bottom, whether at or near the splice it was impossible to decide. The current had ceased. This was our case too—it was the same story on board of both vessels; but there was no use in further conjecture, or in repining over what could not now be avoided. There was but one course left, and that was to splice again and make another, and what we fondly hoped would be, a final attempt. Those on board the Agamemnon had evidently come to the same conclusion, as was shown by the signal which they displayed, and which, translated from the numbers, read as follows:

"Are you ready to splice?"

To this an affirmative was at once returned, and preparations were immediately made to enter once more upon the great work we had undertaken. Our confidence, however, as we have stated, in the prospect of success, was greatly impaired. The Valorous sent her two boats to the Niagara to receive the hawser which was to connect her with the Agamemnon preparatory to making the splice, and in the mean time a boat was sent from the Niagara to the last-named ship, with Lieut. North, Mr. Field, Mr. Everett, and Mr. De Sauty. At the interview of Mr. Field with the engineers on the British cable ship the following agreement was drawn up and signed:

AGAMEMNON, June 28, 1858.

Should any accident occur to part the cable before the ships have run one hundred miles from rendezvous—viz, N. lat. 62° 62′; W. long. 33° 18′—ships to return to rendezvous and wait eight days, when, if the other ships do not appear, then to proceed to Queenstown.

If ships (Niagara and Agamemnon) should return to rendezvous they will at once make the splice and proceed paying out, not waiting for either the Valorous or Gorgon.

CYRUS W. FIELD,
WM. THOMSON,
CHAS. T. BRIGHT,
S. CANNING,
W. E. EVERETT.

During the absence of Mr. Field the work of connecting the two vessels by a hawser, and of making the splice, was successfully and promptly performed, so that by half-past seven, the time at which the red flags were displayed on both ships, the process of paying out for the third time was commenced. The wheels revolved very slowly at first, as if they were living sentient beings, and were imbued with the general feeling of the caution which had taken possession of every one. A slight commotion of the water around the stern of each ship showed that they were both under way, although they hardly seemed to move. The engineers were determined that the cable should have a fair chance to reach the bottom before it was subject to any strain. As soon, however, as a sufficient length had been paid out the speed was slightly augmented, and by nine o'clock the distance was gradually increased at the rate of some five miles an hour, each ship going at two miles and a half in the same time. The evening, which in this northern latitude is so much lengthened out as to leave little or no night, was now setting in, and the mists, closing over the Agamemnon, like a huge veil, rendered her huge hull but dimly visible, while the upper portion of her lofty spars had entirely disappeared. The Valorous had taken her position on the starboard bow, and our little escort, the Gorgon, had resumed her post as our guide. It was a beautiful evening, more beautiful than any we had yet been favored with since we left Plymouth, and the severe gale through which we had passed, and which was yet fresh in our minds, gave us a more thorough appreciation of it than we might otherwise have felt. At ten o'clock the Agamemnon was dimly visible, and in less than half an hour we lost sight of her altogether, as she steamed on her eastward course. No accident had yet occurred to interrupt the work; but we almost dreaded to think of the future, lest it should have some other misfortune still in store for us. Nothing could be more satisfactory than the manner in which the machinery worked, and the process of paying-out was going on most successfully, but we could know nothing of the agencies that were at work, perhaps at the bottom of the ocean, to overthrow what little hope or prospect of success was yet left. Were there sharp pointed rocks lying on that plateau which Lieut. Maury had told us was a level plain, a great submarine prairie, or was it covered with a soft coating of mud or ooze, in which it had been said the cable might rest undisturbed for years, as on a bed of down? The soundings of Lieut. Berryman and Captain Dayman show that at least this part of the plateau is covered with this soft, and for our purpose, invaluable deposit.

It is now twelve o'clock, and the work is progressing in splendid style —in such splendid style, in fact, that, to use the frequent phrase on board, stock has gone up nearly a hundred per cent. The question is asked, if we can lay forty miles of it successfully, what is to prevent us from laying a thousand, should this fine weather continue?—and as we know of nothing, it is generally agreed that it is practicable. Ah, but then the cable is such a delicate thing, and is, therefore so liable to injury, for if, by any accident, a hole, through which it would be impossible to force even a hair, were to be made in it as far as the conductor, the insulation and electrical continuity of the whole three thousand miles would be gone forever. Then again the slightest accident arising from the carelessness of the men might defeat the whole undertaking just when we were within a hundred miles of Newfoundland. One thing, however, is certain—that every day which brings us nearer to our terminus reduces the risks and chances of failure, while the increasing prospects of success will render the engineers more vigilant and cautious. Looking at the magnitude of the enterprise and the wonderful results which must attend its successful termination, our triumph seems almost too much to expect, and we are hourly haunted with a dread that the worst has yet to happen. Every one who can spare the time from his other duties seems to regard the paying-out machine as under his special supervision, and visits it as often as those duties will allow. The same feeling prevails alike among the officers and men, and although there is a rule that none but the engineers shall be allowed to approach within a certain distance, yet they are content with a glance at its operations if they are satisfied that the cable is going out in good order. The parting of the cable, however, is not—as has been shown by our experience on this expedition—the only thing to be dreaded. There is yet another point which is a cause of as much, if not more, disquietude. Let the cable be laid across the plateau, yet, if the little strand of seven copper wires which compose the electrical conductor should be broken, the whole line is absolutely valueless, and the million and-a-half dollars expended in its purchase, might as well have been submerged in the ocean. There is no word perhaps in the English language which was fraught with such important meaning to those engaged on the first expedition as the term "continuity;" and even those who had not the slightest pretensions to scientific knowledge soon learned to appreciate its significance. We approach the electricians' office with a feeling of dread, lest at any moment some one may come out to inform the engineers that the continuity is lost. Let one of the operators inquire for either of the principal electricians and in a few minutes he will have a crowd of eager inquirers about him, all anxious to know if there is any thing wrong with the cable. Talk of the mental excitement of the gambler in comparison with that state of anxiety and suspense in which the mind is kept while the process of paying-out the cable is going on. The machinery may be working in the most satisfactory manner; but as we have shown, it does not depend on the machine alone, for there may be other agencies at work on the bottom of the ocean of which we are at present in ignorance. There is no reason as yet to say positively that there are; but the cause of the break of continuity the first time on this expedition still remains in uncertainty and doubt. The most reasonable theory is, that the outer wires were untwisted in the process of laying, and that the strand of copper wires of which the conductor is composed, parted under the excessive strain to which they were subjected. Whatever theories may be formed in regard to the way in which the continuity was destroyed, and whatever apprehensions may be felt in regard to the final success of the undertaking, the admirable manner in which the operation of paying-out is performed, and the gratifying reports which come from the telegraph office, are certainly calculated to inspire confidence and hope. Stepping upon the poop of our ship, one can trace the long black line of cable as it passes over the stern and enters the water. It is now going out at the rate of about five miles and a half an hour, while the speed of the ship is four and a half; so that the part that is now seen running out over the stern will take something like half an hour to reach the bottom, which lies at a depth of about two miles beneath us. The strain upon it is nineteen hundred pounds, which some say is too much, but which the engineers of the company insist is the very least that can be used. By reducing the weight to a still less amount they contend it would be impossible to prevent the cable from running out perfectly slack, and the loss of a much greater length than the surplus provided over and above the distance between the two points of connection in Ireland and Newfoundland. There is, in fact, a great difference of opinion on this point, and each party holds to its belief with the greatest tenacity. Says one party—those in favor of a strain being put upon the cable—"We might as well not attempt to lay it at all as to lay it without a strain; it would be expending cable to no purpose, and we should not have enough to reach land with."

"Yes," the other party reply, "but the difficulty is in your putting on too great a weight."

"Too great a weight!" is the rejoinder, "why certainly nineteen hundred pounds cannot be called too great a weight."

"You may think not; but look at the cable as it goes over the stern, and observe how many turns it takes before it reaches the water."

This is a feature which appears rather unfavorable, whatever may be the result, and it is well to speak of it here, on account of the importance which some attach to it. The number of turns the cable takes opposite to the twist is eleven in a length of one hundred feet, which is the distance between the stern and the surface of the water. Now, as it is contended, if it takes so many in a hundred feet, will not the outer wires be wholly unlaid before the cable reaches the bottom, and will not the whole strain be brought upon the gutta percha and the conductor?

Whatever party is right, those for or those against the strain, there is no difference of opinion in regard to the successful manner in which the work is going on to-night, or rather this morning, for it is now past one o'clock. The men are as watchful as men can be, and it will certainly be through no indifference or neglect on their part if any mishap should befall the cable. The coilers are in the circle wide awake and on the look out for kinks, with the determination to "squash" them the moment they make their appearance, while the tar gatherers, who look after the grooves of the different wheels over which the cable passes, are determined that none of the black and glutinous stuff shall interfere with its progress. Every thing is going on well; all appear to be doing their best towards the promotion of the undertaking; and having now laid some twenty-five miles successfully, there appear to be no reasons why we should not lay twenty five or a thousand more with equal success. And so with this conclusive argument we retire for the night, and after turning about from one side to the other for at least an hour, in our efforts to go to sleep, we at last succeed, and dream about cable laying, and the terrible effects of too great a strain, till the colored boy Thomas wakes us with the information that it is now seven bells, and that in half an hour breakfast will be on the table.

TUESDAY, June 29th.—The first question which every one asks on awakening is about the cable, and on being informed that it is all right, he is satisfied, until he gets his breakfast, when it is to be presumed he is still more satisfied. Such a question, however, is entirely superfluous, if the individual hangs up his hammock anywhere within the sound of the delightful and harmonious music made by the machine. He can hear for himself, and if he should happen to ask it is simply that he may have the pleasure of being informed of what he knows already, like most men who think they never can hear good news repeated too often. Every thing seems favorable at present for the success of the expedition; the weather never looked more propitious, and the barometer is up so high that it appears as if fixed for the remainder of the summer. The late gale was evidently the closing up of the windy season, which, in these latitudes, renders navigation rather an unpleasant occupation. Had the poet who was so anxious for "life on the ocean wave, and a home on the rolling deep," been with us in that eight days' blow, he would have been perfectly satisfied, and perhaps a little more desirous for a fixed habitation. We were not a little astonished at its duration when we remembered that it was in the mild and balmy month of June, which Lieut. Maury informs us is the best for laying the cable, if gales alone are to be taken into the account. His calculations, however, have proved in our case to be terribly astray, and have been partly the cause of the expedition sailing in this month. Had we but known what was in store for us, and that by delaying our departure for two or three weeks we would have escaped the most severe weather we have yet experienced, we certainly would not have sailed before the latter part of June or the commencement of July. However, as has been stated, we are at last favored with good weather, although not so pleasant as could be desired. It is very seldom during the day that the sun is visible, and the fog is one of our most frequent and unwelcome visitors. But no matter; let us lay the cable this time, and all these little annoyances will soon be forgotten.

At ten o'clock this morning, the length of the cable paid out was about eighty miles, and the whole amount submerged between the two ships, at least one hundred and sixty. This is certainly doing well, and as there is apparently nothing to prevent us from doing this way all the time, confidence is reviving rapidly. The continuity is still perfect, and the electricians report that the signals which are passing between the ships are very satisfactory. No messages are transmitted, as it was agreed before starting that none should be sent. The object of this is to prevent the possibility of those errors which might arise from imperfect manipulation of the operators, or difficulties from the substitution of a more complex form of instrument than is required merely for the transmission of signals. By adopting the present plan, the electricians have not only prevented the occurrence of mistakes from such a cause, but they have succeeded in securing the most perfect way of ascertaining the electrical condition of the conductor. Now it is merely necessary to look at the needle to be assured that the continuity is perfect and that the signals are passing through the whole length of the cable. A great deal of interest centres around the electricians' office, and although there are few, if any, who are scientific enough to understand the various operations that are going on therein, there are none who are disposed to undervalue their importance. The door is almost always shut, and the electricians pursue their work undisturbed; but it is impossible to exclude that spirit of inquiry which will satiate its thirst for information even through a keyhole. The office, which is of the most limited dimensions, has been fitted up alongside of the wardroom coil, and that part of the top of the coil which overlooks it affords a complete view of the movements of the electricians and of the instrument which tells them all about the continuity. The slender piece of steel which is attached to the centre of the dial that stands on the little bench before you, never fails to indicate the condition of the conductor. If there is no current passing through the cable, the piece of steel is perfectly motionless; but the moment a wave is sent through the conductor it exhibits unmistakable signs of activity, and refuses to return to its former quiescent state till the subtle current ceases to pass from ship to ship.

Various reports are current among the sailors in regard to the operations of the electricians and the mysterious performances which are supposed to be going on in the little office. The continuity is something they don't exactly understand, but they are fully aware of its importance, and know as well as the most learned that when it is gone the further laying of the cable is only a loss of time and a useless expenditure of money. Their interest in the work appears to increase every day, and although they will be the least gainers by its success they are none the less anxious to witness its triumphant termination. The cable guard—that is, the body of men by whom the cable was coiled—appear to have taken the whole enterprise under their special charge, and when among their associates who were not so fortunate as to have been enlisted in the service, speak in the tone of Sir Oracles upon every thing connected with the subject, and are regarded by some of their messmates as undisputed authority. There are certainly none on the ship more willing to do whatever is required of them, and none that should be more substantially remembered by the Atlantic Telegraph Company. They have performed the hardest part of the work, and as long as there was a foot of the cable to be coiled they were always ready. As the paying-out process does not require so many, their number has been reduced from over a hundred to about sixty, and the greater part of these are engaged on the coils, looking out for kinks—certainly an easy task compared with that on which they were formerly employed. There they stand, watching the cable as it is unwound at the rate of five and six miles an hour, and passes out over the cone on its way to the paying-out machine. Turn after turn is unwound, faster than a man can walk, until there is not more than six flakes left. The superintendent of the coil now calls out to the man who is at the speaking tube which extends to the engine room to "go slow," an order he immediately repeats through the tube to the engineer on watch. The speed of the ship is at once reduced, the cable is paid out at a diminished rate, and as the last flake goes up, and as the centre of the coil—where the turns are perhaps six times less than near its circumferences—is reached, the danger of kinking is entirely obviated. This process is performed every time a new flake is commenced, as the rate of paying out from the centre—where the turns are not more than seven or eight feet in diameter—cannot, of course, be carried on safely with the same rapidity as at those points where the diameter of the turns varies from ten to forty feet. The coil is already reduced to one-half its original size, and adding what was paid out at the fatal termination of the second attempt, nearly one hundred and thirty tons of cable have been deposited at the bottom of the ocean. The remainder will probably be payed out between twelve and one o'clock to-night, should no accident occur. Then there will be an exciting time, and the commencement on a new coil will be watched with intense interest, for the transfer from one cable circle to another is an operation which is sometimes attended with risk. All the preliminary preparations, however, have been made; the men thoroughly understand the nature of the operation, and it is almost impossible for an accident to take place. As there is considerable anxiety, however, exhibited in regard to its success, there won't be much sleeping done until it is all over. Although the machinery is working perfectly, and the angle the cable makes with the water shows that nothing is to be apprehended from the strain, the electricians' office is watched with an uneasy feeling, and the movements of the electricians themselves are eagerly followed, as if their very thoughts could be read therefrom. "Well, Mr. de Sauty," says one of the most anxious of the cable layers—"well, how is the continuity now?" "Capital, and the signals are coming out in grand style," he replies; and adds, "I hope they will continue so"—a hope in which it is almost needless to say every one indulges. The vessel was going about four miles and a half an hour at six o'clock, and the expenditure of cable is about a mile more, the strain being nineteen hundred pounds, or a little less than one-fourth the amount the cable is calculated to bear. Nine o'clock has struck, and the writer has just sat down in one of the little rooms of the wardroom to record the occurrences of the day in his note-book, when he hears a hasty step outside across the floor, and some one asking in a hurried, nervous manner for Mr. Laws. There is something in both that tells him all is not right, and in a few minutes more his worst fears are realised. The continuity is gone again, although the cable still goes out over the stern in the same style, and there is no indication, so far as appears from the operation of the machinery that there is any thing wrong. But the little magnetic needle in the electricians' office—the unerring indicator of the electrical condition of the cable—refuses to move, and the electricians, after going through all the tests, have at last to succumb. The continuity is gone, and they find it impossible to restore it, although they may use all the appliances of the wonderful science they have at command. It was subsequently, on the return of the squadron to Queenstown, found that the accident was caused by the parting of the cable a few feet from the stern of the Agamemnon.

After all hope of the continuity being restored was abandoned, a most satisfactory test was made in regard to the strength of the cable. The process of paying-out was stopped for about an hour and a half during which the Niagara was literally held by it, the wind blowing fresh all the time. A pressure of over four tons was put upon the brakes, and it absolutely seemed impossible to break the cable. At length it gave way, after holding the ship, as we have said, an hour and an half, and resisting a strain of over four tons which was put upon the brakes. The amount of cable paid out was 142 miles and 280 fathoms, and the total amount lost in the three attempts was 190 miles and 257 fathoms, while the distance run in the last attempt was 109 nautical miles. This is a loss of 21 per cent, or about two-fifths of the surplus which was allowed for excessive expenditure in laying the cable. We have now on board 1,090½ nautical miles, which, added to a similar length on the Agamemnon, makes a total of nearly 2,200 nautical miles.

THE STORM.

The severe gale through which we passed was so little felt on board our ship, that we could not realise its terrible force until we heard of its effects on the Agamemnon. As, however, those who were on board of her during the storm are best qualified to describe the scenes and incidents which occurred during those eight long and anxious days of its continuance, we will let them tell the story. The following vivid and thrilling account is from the pen of Mr. Wood, the special correspondent of the London Times:

At half-past twelve, on Monday morning, the 12th July, the Agamemnon anchored off Queenstown, after having, as your readers are now aware, failed in the attempt to submerge the Atlantic cable. The arrival of the Niagara must have made known the bare fact that the cable had parted, and the tremendous gales and unfavorable weather which all the squadron had to contend against, more or less, though only those on board the Agamemnon can be said to know the real nature of the peril which was encountered, and the long series of difficulties, mishaps, and misfortunes which marked almost the entire cruise from first to last. Not often have so many adverse and disheartening circumstances been crammed into a voyage of thirty-three days, and never have the enterprise, skill, and courage of all connected with the undertaking been more conspicuously displayed than in overcoming each obstacle as it arose, almost with every day. The next thing to success is to deserve it; and certainly, if any scheme was ever entitled to prosper from the perseverance and devotion of those engaged in carrying it out, that success was unquestionably due to the efforts of all on board the Agamemnon in favor of the undertaking. For once, however, fortune did not favor the bold. The attempt to lay the cable failed three times, and once in the most mysterious manner; and those on board have only the satisfaction of knowing that every thing that care and foresight could suggest was done. Beyond this consciousness that all has been achieved that was possible with such materials, no comfort is to be gleaned from the late attempts, except, perhaps, in the fact that as much wire or more still remains than the expedition was commenced with last year, and that both vessels will start again for another and a last attempt the instant they have filled up with coal—that is, by Saturday next at latest.

Your readers are already aware both the "wire" ships quitted England in the most unfavorable trim possible for bad weather. According to appearances at starting, however, bad weather seemed of all others the risk least likely to be encountered, so every thing had been foreseen, prognosticated, and provided for but a gale; that, of course, was out of the question. That traditional veteran, Brown, of the Translantic line, who had weathered so many storms in the Atlantic, showed how in June one never had occurred, while Jones proved how it wouldn't, and Robinson made "all serene" by demonstrating clearly how it couldn't happen. We might meet light winds and encounter some delay from calms and sultry weather, but a gale—a regular Atlantic storm—the very idea was food for laughter. So the wire squadron went to sea, with the two chief vessels laden almost to the water's edge, and in all other respects so little fitted for rough water, that, had a tithe of the tremendous weather they experienced been foreseen at home, not a ship would have moved from Plymouth Sound. The Agamemnon had 2,840 tons dead weight in her, a monstrous load for any ship of her tonnage, but made still more dangerous and overbearing by the manner in which it was stowed. In her hold was the main coil, a compact mass of 1,100 miles in length, and therefore 1,100 tons in weight. On her orlop deck, right forward, between the eyes, as sailors say, was another coil of 100 tons, while on her upper deck, and also right forward, was a coil of 236 tons. The latter was of sufficient size to interfere seriously with the proper working of the vessel from the deck, and the united weights of all, of course, brought the Agamemnon down by the head to an almost unsafe extent. The two small coils, it was said, counteracted the weight of the ponderous mass in the bottom of the ship, and certainly, if they did not tend to check the vessel's rolling, they made it easier and less dangerous to the masts. When the ship did roll, however, there was a constant struggle between the weights at the bottom and the weights at the top, and the ship's sides, as the levers along which the force of both was exerted and resisted, suffered in proportion. This, however, was not the evil of the upper deck coil, nor the reason which, after the bad weather had set in, made it an object of constant anxiety and almost of dread to all on board. It was bad enough to cruise with a dead weight forward of some 250 tons, a weight under which her deck planks gaped an inch apart, and her beams threatened daily to give way; but when to these evils was added the fear in bad weather that in some of her heavy rolls the whole mass would slip and take the vessel's side out, it will be seen that in the whole the precious coil was justly esteemed the *bête noire* of the entire affair—the millstone about the necks of all. However, as we have said, nobody thought of these things when on the morning of the 10th of June the squadron quitted Plymouth. It was then to be a yachting cruise—a mere summer-trip—and any talk of waterproofs and sou'westers would not have been more out of place in a drawing-room than on the deck of the Agamemnon. The day favored this illusion. The barometer stood at 30 64, the weather was hot and sultry, and after all sail had been set and re-set and every naval artifice adopted to catch the breeze that would not come, Captain Preedy reluctantly (for we had little more than coal for the voyage home) gave orders to get up steam. The Niagara, having plenty of coal, had the advantage of being always under steam, and the Valorous and Gorgon did mostly as the Agamemnon. Friday was the ditto of the previous day. The same coquettish breeze came fluttering through the rigging now and then, and it was "Hands, up screw and make sail," and "down screw and shorten sail," all day, till even Capt. Preedy wearied in his efforts to save fuel. Every one wished for a breeze, and there were some who, never having been at sea before, muttered rash hopes that they might rather meet an Atlantic gale; and their wishes were gratified as it turned out far more than the people who expressed them wished. Saturday the weather was cold and dull, but the breeze was so *prononcé*, that the screw was finally hoisted, and the fires raked out, while the Agamemnon, under royals and studding sails, went through the water at a rare pace, sending the foam from her bows and leaving a broad trail of still water upon the angry sea behind. What could be better?

It became less enjoyable towards noon, when the wind and sea got up as the glass went down, and the water grew darker, and the clouds on the horizon were merged into a dirty haze, thickening towards the sea, and boding very ill, indeed, to a summer cruise. Before evening came the sail on the ship was reduced to half, for the wind was up, with squally gusts of heavy rain, and the barometer had gone below 29, and was still falling rapidly. Such was the night; but Sunday told its own tale, for even those least versed in the boisterous premonitory symptoms of an Atlantic gale could see at a glance that we were in for it. The sky seemed a wretched mist—half rain, half vapor—through which the other vessels of the squadron loomed faintly like shadows, watery and unsubstantial as the Flying Dutchman. The sea had changed its bright crisp blue for a turgid foamy aspect, and the great waves of the Atlantic came rolling towards us in tremendous succession, like hills of water with their tops all jagged and broken by the fierce wind, and their white crests of foam blown out into a stream of feathery spray that almost hid the huge dark gulfs between them. The Agamemnon, however, still kept on her way, rolling and straining heavily, and giving all a fair foretaste of what they might expect when the gale set in worse, for the wind was fast going round to the southwest, and it was evident we were only at the beginning. There was Divine service that day on the main deck, and, as officers and men sat in respectful silence, every change in the fast increasing violence of the gale could be distinctly noted through the open hatchways. Heavy rain was falling, and a grayish-looking scud was flying across the sky with inconceivable rapidity; and every rope and shroud, tautened to the utmost, was humming with a loud and clear noise, as if ten thousand accordeons were going at once, while now and then, as the ship fetched up near the wind, her great sails flapped and slotted like peals of thunder, jerking the vessel with an uneasy vibration, as if the masts were coming out of her. Still, among the little congregation, no one moved more than was necessary to keep his seat as the ship lurched over, and the service proceeded as little disturbed by the war of elements outside as if all were assembled within the walls of a cathedral. Towards the end, however, Capt. Preedy looked up wistfully through the hatchway once or twice, scrutinizing the masts and sails with a keen glance, for the storm was getting worse and the air darker and thicker every minute, and the hoarse roar through the rigging was drowning every other sound. Service over, and it was "Hands, reef topsails;" then again, after a little lapse, the same cry; and yet again, till at four in the afternoon the Agamemnon was rushing through the foam under close-reefed topsails and foresail. At half-past four we caught the last glimpse of the Gorgon, as making a long stretch to windward she was lost in the misty darkness that marked the horizon. At five the Valorous began to drop astern, and by six she also had disappeared; but still the Niagara and Agamemnon held on together—the former under sail and steam, the latter, like all the English vessels, under sail alone. Of the two vessels specially appointed to convoy and assist, if necessary, the Agamemnon and Niagara, we saw no more till all danger was past and the squadron had re-assembled at the rendezvous some twelve days afterwards. On Sunday night the gale seemed at its worst. The ocean resembled one vast snowdrift, the whitish glare from which, reflected on the dark clouds that almost rested on the sea, had a tremendous and unnatural effect, as if the ordinary laws of nature had been reversed by the storm.

The Niagara, which had hitherto kept close, began to give us a very wide berth, and, as darkness increased, she too went out of sight, and it was every one for themselves. There must be many of your readers who know what a line-of-battle ship is in a gale of wind, though such experience would give them but a faint notion of how the Agamemnon went at it all that night. She strained and labored under her heavy burden as if she were breaking up, and the massive beams under her upper deck coil cracked and snapped with a noise resembling that of small artillery, almost drowning the hideous roar of the wind as it moaned and howled through the rigging, jerking and straining the little stormsails as though it meant to tear them from the yards. Those in the improvised cabins on the main deck had little sleep that night, for the upper deck planks above them were working themselves free, as sailors say, and, beyond a doubt, they were infinitely more free than easy, for they groaned under the pressure of the coil with a dreadful uproar, and availed themselves of the opportunity to let in a little light, with a good deal of water, at every roll. The sea, too, kept striking with dull heavy violence against the vessel's bows, forcing its way through hawse holes and ill closed ports with a heavy slush, and thence, hissing and winding aft, it roused the occupants of the cabins aforesaid to a knowledge that their floors were under water, and that the flotsam and jetsam noises they heard beneath were only caused by their outfit for the voyage taking a cruise of its own in some five or six inches of dirty bilge. Such was Sunday night, and such was a fair average of all the nights throughout the week, varying only from bad to worse.

Daybreak on Monday ushered in as fierce a gale as ever swept over the Atlantic. The barometer was lower, and, as a matter of course, the wind and sea were infinitely higher than the day before. It was singular, but at twelve o'clock the sun pierced through the pall of clouds and shone brilliantly for half an hour, and during that brief time it blew as it has not often blown before. So fierce was this gust that its roar drowned every other sound, and it was almost impossible to give the watch the necessary orders for taking in the close reefed foresail, which, when furled, almost left the Agamemnon under bare poles, though still surging through the water at speed. This gust past, and the usual gale set in—now blowing steadily from the southwest, and taking us more and more out of our course each minute. Every hour the storm got worse, until towards five in the afternoon, when it seemed at its height, and raged with such a violence of wind and sea that matters really looked serious, even for such a strong and large ship as the Agamemnon. The upper deck coil had strained her decks throughout excessively, and, though this mass in theory was supposed to prevent her rolling so quickly and heavily as she would have done without it, yet still she heeled over to such an alarming extent that fears of the coil itself shifting again occupied every mind, and it was accordingly strengthened with additional shores, bolted down to the deck. The space occupied by the main coil below had deprived the Agamemnon of several of her coal bunkers, and in order to make up for this deficiency, as well as to endeavor to counterbalance the immense mass which weighed her down by the head, a large quantity of coals had been stowed on the deck aft. On each side of her main deck were thirty-five tons, secured in a mass, while on the lower deck ninety tons were stowed away in the same manner. The precautions taken to secure these great masses also required attention as the great ship surged from side to side. But these coals seemed secure, and were so, in fact, unless the vessel should almost capsize—an unpleasant alternative which no one certainly anticipated then. Every thing, therefore, was made "snug," as sailors call it, though their efforts by no means resulted in the comfort which might have been expected from the term.

The night, however, passed over without any mischance beyond the smashing of all things incautiously left loose and capable of rolling, and one or two attempts which the Agamemnon made in the middle watch apparently to turn bottom upwards. In all other matters it was the mere ditto of Sunday night, except, perhaps, a little worse, and certainly much more wet below.

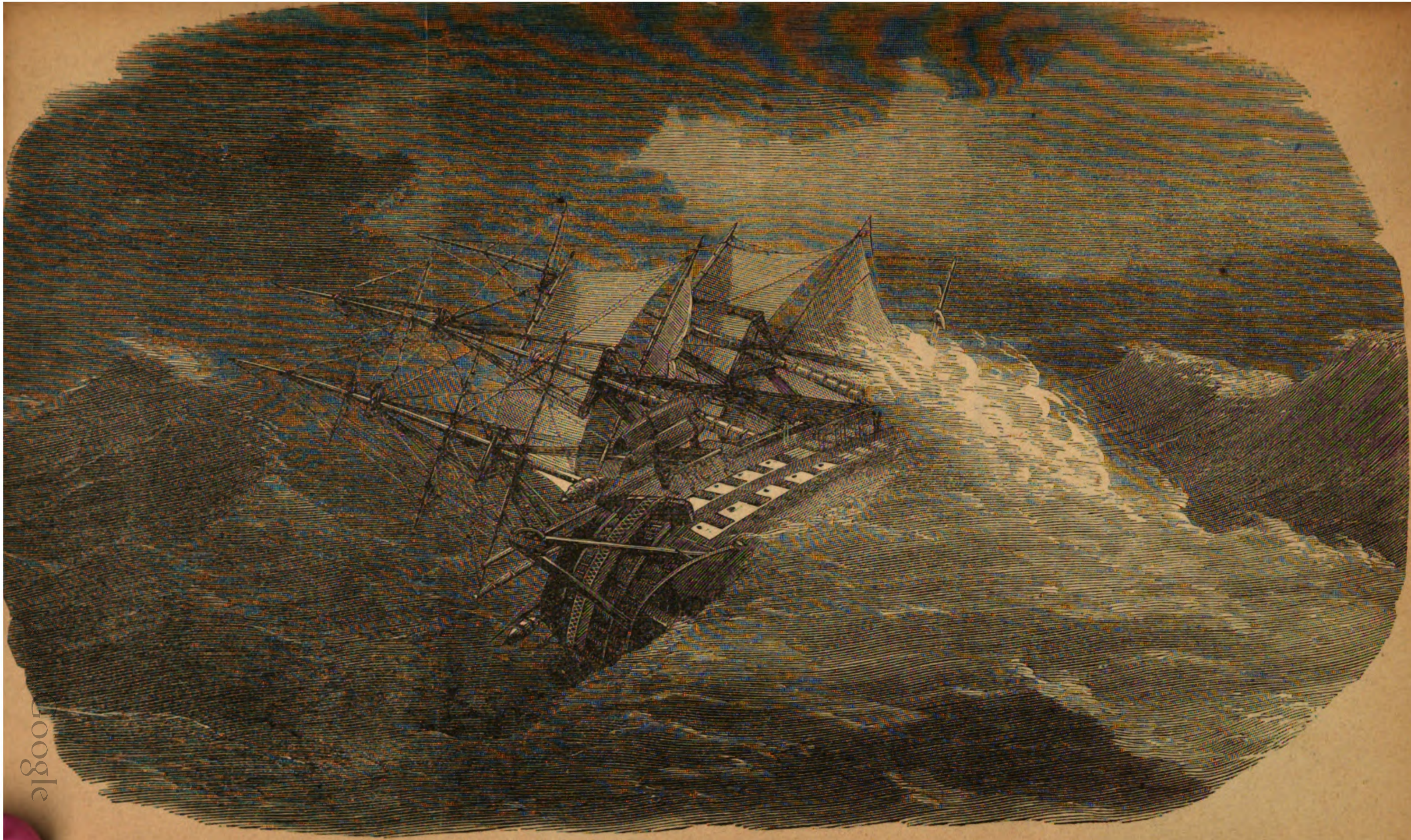
Tuesday the gale continued with almost unabated force, though the barometer had risen 29 to 30, and there was sufficient sun to take a clear observation, which showed our distance from the rendezvous to be 563 miles. During this afternoon the Niagara rejoined company, and, the wind going more ahead, the Agamemnon took to violent pitching, plunging steadily into the trough of the sea, as if she meant to break her back and lay the Atlantic cable in a heap. This change in her motion strained and taxed every inch of timber near the coils to the very utmost. It was curious to see how they worked and bent as the Agamemnon went at every thing she met head first. One time she pitched so heavily as to break one of the main beams of the lower deck, which had to be shored with screwjacks forthwith. It is dull work, however, writing a journal of such mishaps, and duller still to read it.

Suffice, then, to say that there was the same sea and less wind on Wednesday, heavy rain and sea on Thursday, with gusts and squalls and heavy rain on Friday.

Saturday, the 19th of June, things looked a little better. The barometer seemed inclined to go up and the sea to go down, and for the first time that morning since the gale began, some six days previous, the decks could be walked with tolerable comfort and security; but, alas! appearances are as deceitful in the Atlantic as elsewhere, and during a comparative calm that afternoon, the glass fell lower, while a thin line of black haze to windward seemed to grow up into the sky, until it covered the heavens with a sombre darkness, and warned us that, after all, the worst was yet to come. There was much heavy rain that evening, and then the wind began—not violently, nor in gusts, but with a steadily increasing force, as if the gale was determined to do its work slowly, but to do it well. The sea was "ready-built to hand," as sailors say, so that at first the storm did little more than urge on the ponderous masses of water with redoubled force, and fill the air with the foam and spray it tore from their rugged crests. By and by, however, it grew more dangerous, and Captain Preedy himself remained on deck throughout the middle watch, for the wind was hourly getting worse and worse, and the Agamemnon, rolling thirty degrees each way, was laboring heavily, and straining to a dangerous extent.

At four A. M., sail was shortened to close-reefed fore and main-topsail and reefed foresails—a long and tedious job, for the wind so roared and howled, and the hiss of the boiling sea was so deafening, that words of command were useless, and the men aloft holding on with all their might to the yards as the ship rolled over and over almost to the water, were quite incapable of struggling with the masses of wet canvas that flapped and plunged as if men and yards and every thing were going away together. The ship was almost as wet inside as out; and so things wore on till eight or nine o'clock, every thing getting adrift and being smashed, and every one on board jamming themselves up in corners or holding on to beams to prevent their going adrift likewise. At ten o'clock the Agamemnon was rolling and laboring fearfully, with the sky getting darker, and both wind and sea increased every minute. At about half-past ten o'clock three or four gigantic waves were seen approaching the ship, coming heavily and slowly on through the mist, nearer and nearer, rolling on like hills of green water, with a crown of foam that seemed to double their height. The Agamemnon rose heavily to the first, and then went down quickly into the deep trough of the sea, falling over as she did so, as almost to capsize completely on the port side. There was a fearful crashing as she lay over this way, for every thing broke adrift, whether secured or not, and the uproar and confusion were terrific for a minute; then back she came again on the starboard beam in the same manner, only quicker, and still deeper than before. Again there were the same noise and crashing; and the officers in the wardroom, who knew the danger of the ship, struggled to their feet and opened the door leading to the main deck. Here, for an instant, the scene almost defies description. Amid loud shouts and efforts to save themselves, a confused mass of sailors, boys and marines, with deck buckets, ropes, ladders, and every thing that could get loose, and which had fallen back again to the port side, were being hurled again in a mass across the ship to starboard. Dimly, and only for an instant, could this be seen, with groups of men clinging to the beams with all their might, with a mass of water, which had forced its way in through ports and decks, surging about; and then, with a tremendous crash, as the ship fell still deeper over, the coals stowed on the main deck broke loose, and, smashing every thing before them, went over among the rest to leeward. The coal dust hid every thing on the main deck in an instant, but the crashing could still be heard in all directions, as the lumps and sacks of coal, with stancheons, ladders, and mess tins went leaping about the decks, pouring down the hatchways, and crashing through the glass skylights into the engine-room below. Still it was not done; and, surging again over another tremendous wave, the Agamemnon dropped down still more to port, and the coals on the starboard side of the lower deck gave way also, and carried every thing before them. Matters now became most serious, for it was evident that two or three more such lurches and the masts would go like reeds, while half the crew might be maimed or killed below. Captain Preedy was already on the poop, with Lieutenant Gibson, and it was, "Hands wear ship," at once, while Mr. Brown, the indefatigable engineer, was ordered to get steam up immediately. The crew gained the deck with difficulty, and not till after a lapse of some minutes, for all the ladders had been broken away and the men were grimed with coal dust, and many bore still more serious marks upon their faces of how they had been knocked about below. There was some confusion at first, for the storm was fearful; the officers were quite inaudible, and a wild dangerous sea, running mountains high, heeled the great ship backwards and forwards, so that the crew were unable to keep their feet, even for an instant, and in some cases were thrown across the decks in a dreadful manner; two marines went with a rush head foremost into the paying-out machine, as if they meant to butt it over the side; yet, strange to say, neither the men nor machine suffered. What made matters worse, the ship's barge, though lashed down to the deck, had partly broken loose, and dropping from side to side as the vessel lurched, it threatened to crush any who ventured to pass it. The regular discipline of the ship, however, soon prevailed, and the crew set to work to wear round the ship on the starboard tack, while Lieutenants Robinson and Murray went below to see after those who had been hurt, and about the number of whom extravagant rumors prevailed among the men.

There were, however, unfortunately but too many. The marine sentry outside the wardroom door on the main deck had not had time to escape, and was completely buried under the coals. Some time elapsed before he could be got out, for one of the beams used to shore up the sacks, which had crushed his arm very badly, still lay across the mangled limb, jamming it in such a manner that it was found impossible to move it without risking the man's life. Saws, therefore, had to be sent for, and the timber sawn away before the poor fellow could be extricated. Another marine on the lower deck endeavorod to save himself by catching hold of what seemed a ledge in the planks, but, unfortunately, it was only caused by the beams straining apart, and, of course, as the Agamemnon righted they closed again, and crushed his fingers flat. One of the assistant engineers, (Mr. Harvey,) was also buried among the coals on the lower deck, and sustained some severe internal injuries. The lurch of the ship was calculated at 45 degrees each way for five times in rapid succession. The galley coppers were only half filled with soup, yet, nevertheless, it nearly all poured out,



THE AGAMEMNON IN THE GALE OF JUNE, 1858.

and scalded some of the poor fellows who were extended on the decks, holding on to any thing in reach. These, with a dislocation, were the chief casualties; but there were others of bruises and contusions, more or less severe, and of course a long list of escapes more marvellous than any injury. One poor fellow went head first from the main deck into the hold without being hurt, and one on the orlop deck was "chevied" about for some ten minutes by three large casks of oil which had got adrift, and any one of which would have flattened him like a pancake had it overtaken him.

As soon as we had gone round on the other tack the Niagara wore also, and bore down as if to render assistance. She had witnessed our danger, and, as we afterwards learnt, imagined that the upper deck coil had broken loose and that we were sinking. Things, however, were not so bad as that, though they were bad enough, heaven knows, for every thing seemed to go wrong that day. The upper deck coil had strained the ship to the very uttermost, but still held on fast; but not so the coil in the main hold, which had begun to get adrift, and the top kept working and shifting over from side to side as the ship lurched, till some forty or fifty miles were in a hopeless state of tangle, resembling nothing so much as a cargo of live eels, and there was every prospect of the tangle spreading deeper and deeper as the bad weather continued.

Going round upon the starboard tack had eased the ship to a certain extent, but with such a wind and such a sea, both of which were rather getting worse than better, it was impossible to effect much for the Agamemnon's relief, and so, by twelve o'clock, she was rolling almost as bad as ever. The crew, who had been at work since nearly four in the morning, were set to clear up the decks from the masses of coal that covered them, and while this was going forward a heavy sea struck the stern, and smashed the large iron guard frame, which had been fixed there to prevent the cable fouling the screw in paying out. This guard, which, from its peculiar hooped shape, suspended round the stern by chains, the sailors had nicknamed "the crinoline," was about the most cumbersome and ill-contrived piece of mechanism which could possibly have been adopted. From the first hour every one had known that it was perfectly useless for the purpose it was intended to effect, and, what was worse than useless, that it was a source of positive danger also. Now that one side had broken, it was expected every moment that other parts would go, and the pieces hanging down either smash the screw or foul the rudder post. It is not over estimating the danger to say that had the latter accident occurred in such a sea, and with a vessel so overladen, the chances would have been sadly against the Agamemnon ever appearing at the rendezvous. Fortunately it was found possible to secure the broken frame temporarily with hawsers, so as to prevent its dropping further, though nothing could prevent the fractured end from striking against the vessel's side with such force as to lead to serious apprehensions that it would establish a dangerous leak under water. It was near three o'clock in the afternoon before this was quite secured, the gale still continuing and the sea running even worse. The condition of the masts, too, at this time were a source of much anxiety both to Captain Preedy and Mr. Moriarty, the master. The heavy rolling had strained and slackened the wire shrouds to such an extent that they had become perfectly useless as supports. The lower masts bent visibly at every roll, and once or twice it seemed as if they must go by the board. Unfortunately, nothing whatever could be done to relieve this strain by sending down any of the upper spars, since it was only her masts which prevented the ship rolling still more and quicker; and so every man knew that if once they were carried away it might soon be all over with the ship, as then the deck coil could not help going after them; so there was nothing for it but to watch in anxious silence the way they bent and strained, and trust in Providence for the result. About six in the evening it was thought better to wear ship again and stand for the rendezvous under easy steam, and her head accordingly was put about and once more faced the storm. As she went round she of course fell into the trough of the sea again, and rolled so awfully as to break her waste steam pipe, filling her engine room with steam and depriving her of the services of one boiler when it was sorely needed. The sun set upon as wild and wicked a night as ever taxed the courage and coolness of a sailor. There were, of course, men on board who were familiar with gales and storms in all parts of the world, and there were some who, with the writer of this article, had witnessed the tremendous hurricane which swept the Black Sea on the memorable 14th of November, when scores of vessels were lost and seamen perished by thousands; but of all on board none had ever seen a fiercer or more dangerous sea than raged that night and the following morning, tossing the Agamemnon from side to side like a mere plaything among the waters. The night was thick and very dark, the low black clouds almost hemming the vessel in; now and then a fiercer blast than usual drove the great masses slowly aside, and showed the moon, a dim greasy blotch upon the sky, with the ocean, white as driven snow, boiling and seething like a caldron. But these were only glimpes, which were soon lost, and again it was all darkness, through which the waves, suddenly upheaving, rushed upon the ship as though they must overwhelm it, and, dealing it one staggering blow, went hissing and surging past into the darkness again. The grandeur of the scene was almost lost in its dangers and terrors, for of all the many forms in which death approaches man, there is none so easy in fact, though so terrific in appearance, as death by shipwreck.

Sleeping was impossible that night on board the Agamemnon. Even those in cots were thrown out, from their striking against the vessel's side as she pitched. The berths of wood fixed athwartships in the cabins on the main deck had worked to pieces, chairs and tables were broken, chests of drawers capsized, and a little surf was running over the floors of the cabins themselves, pouring miniature seas into portmanteaus, and breaking over carpet bags of clean linen. Fast as it flowed off by the scuppers it came in faster by the hawseholes and ports, while the beams and knees strained with a doleful noise, as if it was impossible they could hold together much longer; and on the whole it was as miserable and even anxious a night as ever was passed on board any line of battle ship in Her Majesty's service. Captain Preedy never left the poop all night, though it was hard work to remain there, even holding on to the poop rail with both hands. Morning brought no change, save that the storm was still as fierce as ever, and, though the sea could not be higher or wilder, yet the additional amount of broken water made it still more dangerous to the ship.

Very dimly, and only now and then through the thick scud, the Niagara could be seen—one moment on a monstrous hill of water and the next quite lost to view, as the Agamemnon went down between waves. But even these glimpses showed us that our transatlantic consort was plunging heavily, shipping seas, and evidently having a bad time of it, though she got through it better than the Agamemnon, as of course she could, having only the same load, though 2,000 tons larger. Suddenly it came on darker and thicker, and we lost sight of her in the thick spray, and had only ourselves to look after, which was quite enough, for every minute made matters worse, and the aspect of affairs began to excite most serious misgivings in the minds of those in charge. The Agamemnon is one of the best line of battle ships in the whole navy, but in such a storm, and so heavily overladen, what could she do but make bad weather worse, and strain and labor and fall into the trough of the sea, as if she were going down headforemost?

Three or four hours more and the vessel had borne all which she could bear with safety; the masts were rapidly getting worse, the deck coil worked more and more with each tremendous plunge, and, even if both these held, it was evident that the ship itself would soon strain to pieces if the weather continued so. The sea, forcing its way through ports and hawseholes, had accumulated on the lower deck to such an extent that it flooded the stokehole, so that the men could scarcely remain at their posts.

Every thing went smashing and rolling about. One plunge put all the electrical instruments *hors de combat* at a blow, and staved some barrels of strong solution of sulphate of copper, which went cruising about, turning all it touched to a light pea green. By and by she began to ship seas. Water came down the ventilators near the funnel into the engine room. Then a tremendous sea struck her forward, drenching those on deck, and leaving them up to their knees in water, and the least versed on board could see that things were fast going to the bad unless a change took place either in the weather or the condition of the ship. Of the first there seemed little chance. The weather certainly showed no diposition to clear, on the contrary, livid looking black clouds seemed to be closing round the vessel faster and faster than ever. For the relief of the ship three courses were open to Capt. Preedy—one to wear round and try her on the starboard tack, as he had been compelled to do the day before; another, to fairly run for it before the wind; and, the third and last, to endeavor to lighten the vessel by getting some of the cable overboard. Of course the latter would not have been thought of till the first two had been tried and failed, in fact, not till it was evident that nothing else would save the ship. Against wearing round there was the danger of her again falling off into the trough of the sea, losing her masts, shifting the upper deck coil, and so finding her way to the bottom in ten minutes, while to attempt running before the storm with such a sea on was to risk her stern being stove in, and a hundred tons of water added to her burden with each wave that came up afterwards, till the poor Agamemnon went under them all forever.

A little after ten o'clock on Monday, the 21st, the aspect of affairs was so alarming that Capt. Preedy resolved at all risks to try wearing the ship round on the other tack. It was hard enough to make the words of command audible, but to execute them seemed almost impossible. The ship's head went round enough to leave her broadside on to the seas, and then for a time it seemed as if nothing could be done. All the rolls which she had ever given on the previous day seemed mere trifles compared with her performance then. Of more than 200 men on deck at least 150 were thrown down and falling over from side to side in heaps; while others, holding on to ropes, swung to and fro with every heave. It really seemed as if the last hour of the stout ship had come, and to this minute it seems almost miraculous that her masts held on. Each time she fell over her main chains went deep under water. The lower decks were flooded, and those above could hear by the fearful crashing, audible amid the hoarse roar of the storm, that the coals had got loose again below, and had broken into the engine room, and were carrying all before them. During these rolls the main deck coil shifted over to such a degree as to quite envelope four men, who, sitting on the top, were trying to wedge it down with beams. One of them was so much jammed by the mass which came over him, that he was seriously contused, and had to be removed to the sick bay, making up the sick list to forty-five, of which ten were from injuries caused by the rolling of the ship, and very many of the rest from continual fatigue and exposure during the gale. Once round on the starboard tack, and it was seen in an instant that the ship was in no degree relieved by the change. Another heavy sea struck her forward, sweeping clean over the forepart of the vessel, and carrying away the wood work and platforms which had been placed there round the machinery for under running. This and a few more plunges were quite sufficient to settle the matter, and at last, reluctantly, Capt. Preedy succumbed to the storm he could neither conquer nor contend against. Full steam was got on, and, with a foresail and foretopsail to lift her head, the Agamemnon ran before the storm, rolling and tumbling over the huge waves at a tremendous pace. It was well for all that the wind gave this much way on her, or her stern would infallibly have been stove in. As it was, a wave partly struck her on the starboard quarter, smashing the quarter galley and wardroom windows on that side, and sending such a sea into the wardroom itself, as literally almost to wash two officers off a sofa on which they were resting on that side of the ship. This was a kind of parting blow, for the glass began to rise, and the storm was evidently beginning to moderate; and though the sea still ran as high as ever, there was less broken water, and altogether, towards mid-day, affairs assumed a better and more cheering aspect. The wardroom that afternoon was a study for an artist, with its windows half darkened and smashed, the sea water still slushing about in odd corners, with every thing that was capable of being broken strewn over the floor in pieces, and some fifteen or twenty officers seated amid the ruins, holding on to the deck or table with one hand, while with the other they contended at a disadvantage with a tough meal—the first which most had eaten for twenty-four hours.

Throughout the whole of Monday the Agamemnon ran before the wind, which moderated so much that at four A.M. on Tuesday, her head was again put about, and, for the second time she commenced beating up for the rendezvous, then some two hundred miles further from us than when the gale was at its height on Sunday morning. Tuesday was a calm, fine day, though of course with a heavy swell on. Wednesday was also warm, fine, and calm, and for the first time for a fortnight we had a real summer day, and the reefs were shaken out of the topsails. Immediately the ship began to run before the wind. On Monday the shrouds of the main and fore masts were lashed in such a way as to give some support to the masts, and on Wednesday advantage was taken of the calm to "tauten" up the main rigging three inches, which for wire rope was a great gain. It was well that this was done in time, for on Wednesday, the 23d, the glass again went down; it was the old song of wind and rain, with heavy squalls, rough sea, and reefed topsails. So little was gained against this wind that Friday, the 25th, sixteen days after leaving Plymouth, still found us some fifty miles from the rendezvous. So it was determined to get up steam and run down on it at once.

As we approached the place of meeting, the Valorous hove in sight at noon, and in the afternoon the Niagara came in from the north, and in the evening the Gorgon from the south; and then, almost for the first time since starting, the squadron was reunited near the spot where the great work was to commence. The rendezvous actually agreed upon was 52° 2′ N. latitude, 33° 18′ W. longitude, but the place where the vessels met was in 51° 54′ latitude, 32° 33′ longitude, or about thirty miles more towards the English coast than had been agreed upon. The Valorous, it appeared, had been first on the real rendezvous. The Niagara was the next, arriving under steam two days before the Agamemnon, and the Gorgon, which had had a very bad time of it, and was also near losing her masts, was third. The Niagara seemed to have weathered the gale splendidly, though, nevertheless, with her, as with all others, it had been a hard and anxious time. She had lost her jibboom, and her spare spars and buoys for the cable had been washed from her sides and gone no man knew where.* On the evening of Friday, the 25th of June, the four vessels lay together side by side, and there was such a stillness in the sea and air as would have seemed remarkable in an inland lake; on the Atlantic, and after what we had all so lately witnessed, it seemed almost unnatural.

RETURN OF THE SQUADRON, AND ARRIVAL AT QUEENSTOWN.

According to the terms of the written agreement, which has been given in the narrative of the expedition, the whole fleet were to return after the two cable ships should have gone over one hundred miles towards their separate destinations, and it was in compliance with this explicit understanding that the Niagara proceeded to the point indicated therein. We arrived on the 5th of July, expecting to find the Agamemnon had got in before us. We were considerably disappointed, however, when we learned there were as yet no tidings of her, although she had over two hundred miles the start of us on her course. The supposition that she had not gone one hundred miles was greatly strengthened by her non-appearance, and we were forced to the conclusion, after two or three days, that she had really returned to the rendezvous, and was there awaiting us. Day after day passed, and yet there was no Agamemnon, no Valorous. Terrible stories were circulated about the missing ships; it was said that we had abandoned them, and that the Agamemnon had gone down. The London *Times*, with the most indecent haste, accused us of circulating reports throwing the discredit of the failure on the Agamemnon, and intimated that they must wait her arrival before they received reliable intelligence. At last the Agamemnon made her appearance, having returned, as we supposed, to the rendezvous in mid-ocean. The reliable intelligence had at length arrived, and it was ascertained that the cable had parted about twenty feet from her stern, and that she had gone a distance of one hundred and sixteen miles, or seven miles more than our ship. The reader will be somewhat surprised at the course pursued by her engineers in this instance, when he is informed that the agreement was made entirely on account of her not having a sufficient supply of coal. On leaving Plymouth she had but 450 tons, while the Niagara had 850, and although the reports in the London *Times* about our "water-logged" appearance, the strong probability of our going to the bottom, and the deplorable condition of our ship, were well calculated to arouse the fears of our people at home about our safety, we came out of one of the worst gales that has ever been seen in the North Atlantic, with no other damage to our noble ship than the loss of part of her bowsprit and one of the wings of the eagle which forms her figure-head. How the Agamemnon fared the reader is already aware. It is a strange fact that the breaking of the cable at the stern of the Agamemnon was never satisfactorily accounted for by the engineers in charge of the paying-out machinery on board that ship.

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* The correspondent of the London Times is incorrect in this statement. The Niagara lost her jibboom, but not her spare spars.—AUTHOR.

While the Telegraph squadron were lying in the harbor of Queenstown, meetings were held by the Board of Directors in London, at which it was proposed to abandon the enterprise, and, if possible, to sell the cable. The news of this proposition no sooner reached Mr. Field than he started with all possible dispatch for London. On his arrival there, he proceeded at once to the office of the Company, remonstrated with the despondent, upheld the wavering, and finally, by the force of his own unconquerable will, and the efficient aid of those who still hoped in the midst of defeat, succeeded at last in obtaining the consent of the Company to make another attempt. This effected, he returned to Queenstown, where immediate preparations were made for the sailing of the squadron on the last and successful expedition.

THE FINAL EXPEDITION OF 1858.

THE CABLE LAID.

The Niagara left the Cove of Cork for the telegraph rendezvous on the 17th of July, and arrived at her destination, or within a few miles of it, on the evening of the 23d, having made the passage in six days. As it had been previously decided that each ship should make the best of her way to mid-ocean, the vessels did not sail in company, the Gorgon and Valorous having started some hours before the Niagara, while the Agamemnon did not leave till three o'clock next morning. We saw none of the ships, therefore, till after our arrival at the rendezvous.

The weather, which had been, with one day's exception, very fine during our stay in Cork, looked heavy and threatening the evening of our departure. Great masses of leaden-colored clouds shut out the blue sky, and sent down shower after shower of drenching rain. Then sweeping in upon the land, they descended upon it in the form of a dense fog, concealing the inland mountains, and throwing out in strong relief the bold headlands of the iron-bound coast. The heavens had certainly a most funereal aspect, and overshadowed our prospects with a gloom that seemed to affect every one more or less. We were now on our way to make the second attempt to lay the Atlantic telegraph cable, and when we remembered the result of the first, we might be pardoned if we were somewhat dubious as to its termination; although, of course, we all "hoped for the best." Were we to pass through another gale before we should be able to make the splice, and when that splice was made, were our efforts to end in another inexplicable break of continuity, or fracture of the cable? These were questions that pressed rather heavily upon some of us, and converted a considerable number into confirmed sceptics. However, here we were outside of the Cove of Cork, bound for the telegraph rendezvous, and determined to resume the work with the same energy, if not with the same buoyant and sanguine feelings with which we entered upon it the preceding month. The sceptics still remained sceptical, and the hopeful sustained themselves with the idea that there was a chance of success yet.

The prospect of fine weather, which appeared so gloomy at the time of our departure, grew brighter as we increased our distance from the land; the gray sombre-looking clouds began to clear away, and the barometer, which had exhibited a very decided downward tendency, now began to rise, and continued rising till it had reached the gratifying altitude of 30° 40′ The only thing of which we had any just cause of complaint was the wind, and that blew from the wrong quarter with the most disgusting persistency. But it did not blow all the time, for we had some three or four days of the calmest weather, both before and after arrival at the rendezvous, that has ever been seen in these latitudes. To say that it was calm is not doing full justice to it—there was not a breath in the air, and the water was as smooth as that of a mill-pond. Even the wake of the ship scarce ruffled its surface, and the gulls—which have visited us almost daily, and to which our benevolent liberality has dispensed innumerable pieces of pork—throw an almost unbroken shadow upon it as they stoop in their flight to pick up the largest and most tempting. Those lazy-looking white clouds hanging over the western horizon have not changed either their form or their position for the last two hours, and that particular one to which the imagination has given the form of a human face, is just as grotesque and as much like a human face as it was an hour ago. The officer of the deck has been trying to persuade himself that those fleecy, vaporous affairs are "mares' tails," and that the breeze, of which they are regarded by the nautically learned as the sure forerunners, must soon come; but whatever may be the rules in such cases made and provided, they are certainly at fault this time, for there is no breeze, and not the remotest probability of any. The long streamer which is displayed from our main truck hangs lazily against the mast, and even the dog-vane, which tells from which quarter the wind comes, says nothing upon the subject. It is indeed a dead calm, and but for that never-ceasing swell, which has rightly been denominated "the pulse of the sea," our vessel would be as motionless as "a painted ship upon a painted ocean." The smoke which comes up from our engine fires through the huge chimneys rises like pillars, and spreads out in a broad canopy over the masts. "There comes a breeze dead ahead," says one of the sailors, pointing in the direction of the bow, and the clear and distinctly defined blue line which marks the horizon seemed to indicate the appearance of wind in that quarter; but an hour has passed since then, and still the dog-vane remains unmoved, the streamer hangs idly against the mast, and the canopy of smoke is becoming denser. The clouds have changed, it is true, but no wind will come from them. The human face has been converted into the head of an eagle, and those banks of white silver cumuli are very slowly changing their appearance.

So thoroughly has the calm affected every thing and everybody in and about the vessel, as to throw a sort of dreamy repose over all. It is impossible to get up a conversation on the most interesting topic, and you would imagine that our ship had ceased to be a part of the great world in which she moved, and that her living freight had nothing in common with the rest of humanity, but belonged to the unreal creations of dream land. And yet this is the very ocean, and we are within a few miles of the point where that terrible gale burst upon us, and those huge angry waves buffeted and tossed us about for eight or nine days. This settled, dreamy calm has rested on the ocean for four days, which are closed by sunsets as gorgeous as any ever seen under a tropical sky. The whole heavens are suffused with a golden glow from the descending sun, and as he disappears below the horizon it turns to a deep crimson, which is reflected in the unruffled ocean until there appears to be but one sky, and the ship seems suspended in space. The silver gray of evening brings us back again to the world; the golden glow and the deep crimson have disappeared, but the pleasant twilight remains, and will continue with us so long as to leave but a small portion of the twenty-four hours for the night. In fact the summer nights in these high latitudes are hardly entitled to the name, and what between the long twilight and early daybreak, have scarcely time enough to get rightly dark.

We have now been five days out, and if we have only ordinary luck we will certainly be at or near the precise point, which is marked by a dot on the chart of the North Atlantic, about half way between Ireland and Newfoundland. To-morrow evening, Friday the 23d, is fixed upon as the time of our arrival, and everybody is indulging in speculations as to the Agamemnon being there before us. In this all-absorbing question every thing else seems to be forgotten. We no longer hear of the prospects of the heroes and heroines of the romances and novels which have furnished topics for animated discussion for some days past, and no one seems to care whether the hard-hearted father has or has not been struck with remorse, and consented to make his lovely and amiable daughter superlatively happy by marrying the man of her choice. The dark designs of the schemer who has been baffled by the superior abilities of the lover (lovers are always a very superior class of men, although generally poor), have escaped that condemnation and sentence which all virtuous and high-minded readers are supposed to pass upon such characters, and even his terrible fate is hardly thought of in the great question which agitates the minds of all on board our ship.

We are about one hundred and thirty miles from the rendezvous, and at the rate we are now going we shall be at our post to-morrow evening, so that we may commence the work of laying the cable the following morning by daybreak.

Throughout the whole of Friday every one was on the lookout for the Agamemnon, but the best telescope on board failed to discover that ship, and so we lay as near that imaginary point called the Rendezvous, as the wind and surface current would permit. Saturday morning arrived, but with it no Agamemnon, and by seven o'clock, Saturday evening, we again made the rendezvous, having drifted considerably during Friday night. To be brief, we had no better success now than the day before; and as man is a somewhat restless animal, we became both restless and impatient in our desire to begin the work. The weather, which cannot be too highly eulogized, was magnificent for cable laying, and the barometer gave the strongest assurance of its continuance. Had she arrived on Sunday it would have been useless, as the religious scruples of our captain interpose an insuperable obstacle; and so we must patiently wait till Monday, the 26th. It was, however, somewhat consoling to learn that the Valorous had arrived on the morning of the 25th, although she had neither seen nor heard of the long expected ship. She was first seen at six o'clock, but as she came along under sail alone, she did not approach near enough to exchange signals till nine.

"I hope you are all well," was the purport of the signal made by our ship.

"Very well, I thank you," was the reply.

"Have you seen the Agamemnon?" asked the captain of the Valorous.

"No," replied Captain Hudson, and then asked in return if he had seen the Gorgon, but to this he received a negative response.

And after this brief interview and still more laconic conversation, the two ships separated. Monday afternoon, July 26, the Valorous was in sight, and the sea was as calm as we had yet observed it—so calm, to use the words of one of the crew, that it would be mere child's play to lay the cable under such circumstances. About ten o'clock Captain Aldham and one of his lieutenants paid us a friendly visit, and remained about an hour. The 27th was, so far as the weather was regarded, a perfect counterpart of the 26th. This day we were favored with another arrival, though not that we had first expected. The Gorgon was descried about two o'clock in the afternoon coming from the eastward, and it was but a few minutes after five when she came up. Now as two ships can hardly come together on the high seas without having something to say to each other, it is not to be expected that the Niagara and Gorgon would pass each other without indulging in some remarks. And so, Captain Hudson and Captain Dayman had the following brief but pithy dialogue:

Captain H.—I hope you are all well on board?

Captain D.—All well, thank you—hope you are the same?

Captain H.—(Nodding an affirmative, and finishing the rest of the sentence by word of mouth)—Thank you.

Captains H. and D. (together)—Have you seen the Agamemnon?

A pause, and the question is repeated by Captain Hudson alone.

Captain D.—No, not since we parted. Have you any coal to spare? We have had head winds all the way out.

Captain H.—None at all. We have also had head winds. I think the Agamemnon could give you some, as she can't have burned much since she left.

Thus ended the conversation, and the Gorgon passed on to pay her respects to the Valorous, which was about two miles off our port quarter. Towards evening we observed both vessels had hoisted their ensigns, but the weather had become overcast and we could not discern any other ship. We also displayed ours, however, so that if it should turn out to be the Agamemnon she might be fully aware of our arrival. We felt confident that she had been seen by the Gorgon and Valorous, and that she would make her appearance next morning and answer for herself. Five days before we had made the rendezvous, and we were just beginning to get tired of waiting; and during that time what splendid days we have had—days which the Atlantic Telegraph Company could not purchase at ten thousand dollars apiece from that inexorable myth the Clerk of the Weather! However, according to Lieut. Maury, we can afford to be a little prodigal this month, and if we do lose a few days, why, after all, it can hardly be considered a loss when we come to reflect that July and August are the two best months in the year for cable laying. We are certainly entitled to some consideration after the gale through which we passed last month—a month we were led to believe was the mildest in the whole year.

On board of our ship every precaution has been taken to ensure success. The machinery has been put in proper running order, and the watches are all made out for the different departments. The captain and the first lieutenant, Mr. North, keep watch and watch, that is, they divide the day into alternate watches of four hours each, with the usual interposition of "dog watches," between four and eight in the afternoon. Mr. North, it may be remembered, was also first lieutenant of the Niagara last year, and has taken the most active interest in the enterprise. The duty which he performed in connection with Captain Hudson is an entirely voluntary one, as, according to the rules of the navy, he is not considered a watch officer, and his services are therefore given freely, and not in compliance with any obligations arising from his official position.

All we want now is a continuance of the fine weather we have had nearly the whole of this month, to lay the cable, for we still feel convinced of the practicability of the work, despite the unexplained break of continuity and fracture of the wire.

CEREMONY OF LAYING THE CABLE,

FIRST DAY—JULY 28.

We were right in our surmizes that there must have been some reasons for the Valorous and Gorgon displaying their flags, and our hopes that the Agamemnon had at last made her appearance, though invisible to us in consequence of the fog prevailing at the time, were now fully realized. About five o'clock this morning the mist began to clear away; and some ten or fifteen minutes after, our sister ship could be distinctly seen between two and three miles off our port quarter. Mr. Field had offered a reward to the man who would first discover her, and as may be supposed the crew were thoroughly wide awake, and on the lookout for the expected vessel. Two or three days before she came there were reports innumerable as to her having been seen, and at almost every point of the compass. The smallest speck of a cloud, barely visible through the best telescope on board, was converted into smoke by those who were determined to see her, even if she were a hundred miles away. "That certainly must be her," said one of the quartermasters, pointing at some imaginary object with the telescope, which he had just taken from his eye. "Yes, that's her, and no mistake this time."

"Where?" asked a dozen anxious querists all at once, and all as eagerly stretching out their hands for the telescope.

"There, there!" he replied, looking towards the cloudless horizon—"there! don't you see it, right there on the starboard bow, about three points?"

The man who had been most fortunate in securing the glass first, took a long observation at the point thus indicated, and after scanning it three or four times, announced in a tone of disgust that there was no smoke, and that it was "Cape Flyaway"—a nautical expression, which, literally translated, signifies "nothing."

The more energetic and enterprising would occasionally run up to the head of the topgallant-masts, and take a view of the horizon from that elevation, but with no better success than those who, of a less aspiring mind, remained on the deck, or kept their lookout from the forecastle or poop. Never was greater interest manifested in any ship than the proffered reward created in that vessel; and yet it was not the amount, but rather the distinction which the discovery would confer upon the man by whom it should be made. Then there was the excitement of the thing itself, and that alone would be sufficient to arouse the feelings of the most indifferent. Only those who have been at sea for any length of time can fully appreciate the value of this word, or how little it takes to get up an excitement at sea, where life is but one constant round of monotonous incidents which follow each other in as regular succession as the hours on a dial. The "reward," therefore, grew into all the magnitude of an important question, and with the addition of some whales, which occasionally indulged in spouting, served to make the time pass less heavily on our hands.

The arrival of the Agamemnon overtopped all other subjects, and knocked into a cocked hat the various opinions which had been circulated in regard to her engines having broken down. "There she is, sir," said the delighted sailor to the officer of the deck, when he observed her heavy-looking hull slowly emerging from the mist which still hung over her masts like a veil. "There she is, sir, on our port quarter." And there she certainly was—no mistake this time—there were the two white streaks, but still more conclusive than this—there was the cable-wheel over her stern, and there was the other over her bow. It was the Agamemnon, ten days out from Cork, having made the rendezvous the evening before, as we subsequently learned.

As has been stated, she was between two and three miles off our port quarter when first observed, and as there was no indication of either smoke or steam, we concluded that she had been saving her coal, and had sailed the greater part, if not the whole, of the way. This we afterwards found to be incorrect, as she had consumed two hundred of the five hundred tons with which she started, and had during the passage to mid-ocean met with head winds. She had also a repetition, on a small scale, of the bad weather we experienced during the month of June, but as it lasted only twenty-four hours, and as the wind did not freshen into a gale, there was no ground for alarm. One sea, however, made its way into the ward-room, and broke some of the bulkheads. But for the head winds she would have arrived two or three days sooner, and thus given us the advantage of the fine weather with which we have been so wonderfully favored since we left Queenstown, and, in fact, from the time the squadron left mid-ocean in June, up to the date of our re-appearance on the rendezvous this month. Here we are at last, however, ready to commence operations once more, and determined if success be possible, we will make every effort to secure and deserve it. Whatever other charges may be preferred against the enterprise by the dissatisfied, it cannot be said that those who are engaged in it have shown any want of perseverance or energy. Although they have met with failure after failure, and reverses that would have discouraged almost any other body of men, they have exhibited a determination that is deserving of all praise, and a hopefulness that no disasters could subdue. Preparations are now being made to resume the work, and although there are many who think it a useless expenditure of time and money, yet there are others who are sanguine as to the result. There is no want of energy certainly among our men, and if you could only witness the hearty assent that is given to the following inscription which has been made in chalk on the outside of one of the cable circles, you would say there is no want of enthusiasm in them:

"The wire will be laid, and we will go to New York."

About half-past nine o'clock the Agamemnon, having got up steam, was observed slowly approaching us, and in somewhat less than an hour after she crossed our bow, previous to taking her position on our stern, so as to be ready for splicing. All the preliminary preparations had been made on board the Niagara, and every thing was in readiness for the commencement of the work so far as she was concerned. The men were at their posts by the machinery, the stoppers were all arranged, the electricians were on watch in the long vacant office, the tar-tubs were put in their proper places, the scrapers adjusted, and nothing was left undone that human foresight could do. Within the boundaries of the rope that enclosed the machine, none but the privileged few were allowed to enter, and if any one did so, through ignorance, the inscription which was posted conspicuously in front, and which reads as follows, warned him against further intrusion:

"No one here except the engineer's watch."

This was certainly laconic, but if it was not sufficient for the purpose the marine who stood close by informed him that he must leave. This was not all, however, for if, under the impression that he was at liberty to talk to the operator in charge of the dynamometer, he was soon made aware of the absurdity of such an idea by another notice, to the effect that no conversation was allowed with that particular individual. Then, in addition to all this, the officer in charge of the platform, which was raised above two of the coils to facilitate the paying out of the cable, took care that none but those fully authorized should go up there. The curious were thus excluded from every point where they might interfere with the operations of those on watch, but still they had ample opportunities to witness all that was going on, and outside of the bounds they certainly indulged themselves to the utmost. There seemed to be a fascination for them in every thing connected with the process of paying out, but more particularly in the work of uncoiling the cable. The outside of the circle was crowded with spectators, who watched in silence the long black line as it unwound itself and passed over the machinery on its way into the great ocean depths. There they stood, hour after hour, looking at the removal of one flake after another, as if it were something new, and each mile served but to increase the attraction.

The Agamemnon has now taken her position about a hundred fathoms from the stern of the Niagara, and the hawser has been passed between the two ships previous to making the splice. Before the commencement of operations, however, Captains Preedy and Aldham came on board of our ship, and Mr. Field and one of the electricians visited the Agamemnon to make further arrangements in regard to the work before us. After the necessary time these are made, and it is concluded that if the cable should be broken after 150 miles shall have been paid out from each ship, both vessels shall at once proceed to Queenstown, there to await orders from the company regarding the final disposal and stowage of the cable. The captains have returned to their ships, the splice is made, and the work of paying out proceeds, while the two ships move so slowly through the water that their motion is hardly perceptible. The rate of the cable is certainly much faster than that of either of the vessels, for the simple reason that it has to descend to a depth of about two miles, and it will take a considerable time to do that. The announcement comes from the electrician's office soon after the splice has been lowered, that the continuity is perfect, and with this assurance the engineers go on more boldly with the work. In fact, the engineers may be said to be under the control of the electricians; for if they report any thing wrong with the cable they are brought to a stand, until they are allowed to go on with their operations by the announcement that the insulation is perfect and the continuity is all right. The sailors, who are somewhat in the dark as to the scientific definition of the term, are generally supposed to have a particular animosity to it, under the belief that it is it which causes all the difficulty. "Darn the continuity," said an old sailor, at the end of a scientific but rather foggy discussion which a number of his messmates had on the subject—"Darn the continuity; I wish they would get rid of it altogether. It has caused a darned sight more trouble than the hull thing is worth. I say they ought to do without it, and let it go. I believe they'd get the cable down if they didn't pay any attention to it. You see," he went on, "I was on the last exhibition" (expedition he meant, but it was all the same—his messmates did not misapprehend his meaning), "and I thought I'd never hear the end of it. They were always talking about it, and one night, when we were out last year, it was gone for two hours, and we thought that was the end of the affair, and we would never hear of it again. But it came back, and soon after the cable busted. Now, I tell you what men, I'll never forget the night, I tell ye; we all felt we had lost our best friend, and I never heard the word continuity or contiguity mentioned but I was always afraid something was going to happen. And that's a fact."

This was conclusive on the minds of the majority of his hearers; but a number were of opinion that it was all right, and, at the risk of being considered humbugs, asserted their belief that whatever might be said against the continuity they couldn't do without it, and that because it was gone all the trouble had occurred.

The work of paying-out the cable was commenced at one o'clock. The speed of the vessel was gradually increased after sufficient had been lowered over the stern to reach the bottom, and by two o'clock five miles had left the ship, and she had gone two miles from the starting point. The observation taken by the Agamemnon and Niagara showed the position of both ships, as follows: Lat. 52° 09′, long. 32° 29′. To accomplish the work, the former has eleven hundred nautical miles, and three hundred tons of coal; while the latter had the same amount of cable and five hundred tons of coal. This will give our ship from ten to fifteen days' steaming; while the Agamemnon has sufficient for ten days, should she burn at the rate of thirty tons per day. But, if we should find that we have not enough to reach the land with, we will, if necessary, burn the spare spars; and should we be still further pressed, we will take down even the bulkheads for fuel. It is not very probable, however, that we shall be reduced to such straits. Mr. Follansbee, our chief engineer, assures us that we will have sufficient. Let us once get sight of Newfoundland, however, and though every ton of coal in our bunkers were expended, we will contrive to get into Trinity Bay and land the cable. We have already paid out a little over thirty miles of cable, although it is not yet seven o'clock, and the ship's speed varies from four to five miles per hour. There is a long distance yet, it is true, between this and Newfoundland, and thirty miles is a very small fraction of 882 miles—the distance from the point at which we made the splice to the telegraph station at the head of Trinity Bay. In this respect the Agamemnon has certainly had the advantage of us, as she will have but 813 miles to go—or sixty less than the Niagara. The depth of water here, according to the chart of soundings, is 1,550 fathoms; but the depth, so far as our experience testifies, presents little or no obstacle to the laying of the cable. The sea is smooth; the barometer well up; and if we can only do for the next seven days as well as we have done since one o'clock, we will be at Newfoundland by the 5th of

August, and to New York some time between the 15th and 20th of the same month. But we have been somewhat too hasty in our calculations, for our ship has just slowed down, and the propeller has ceased working for the last ten minutes. There must be something wrong to cause this interruption. Let us take a look at the machine. The cable still goes out, which certainly would not be the case if it had parted. Ah! the continuity! that's it—there's where the difficulty lies. And as the electricians are the only parties who can inform us on that point, we at once go in search of them. A visit to their office explains the whole matter. The continuity is not gone altogether, but is defective—so defective that it is impossible to get a signal through the cable. Still there is not "dead earth" upon it, and all hope, therefore, is not lost.

When dead earth, as it is termed, is on the conductor, then, indeed, the difficulty is beyond remedy, for it shows that the conductor must be broken, and is thrown under the influence of terrestrial magnetism. But the continuity is not gone, and although with darkening prospects, we are still safe while it remains, even imperfect as it is. The old adage, that "bad news travels fast," was never more fully realised than in this instance. The sad intelligence was known to every one on board the ship about fifteen minutes after it was announced to Mr. Field, and those who predicted the failure of the expedition fell back upon their prophecy, and hinted in a modest way at their own perception. It would be absurd to say that the occurrence was not discouraging; it was painfully so, for the hopes of some of us had really begun to revive, and we were gaining confidence every hour. Now nothing could be done. We must wait until the continuity should return or take its final departure. And it did return, and with greater strength than ever. At ten minutes past nine P. M. the electrician on duty observed its failing, and at 11.30 he had the gratifying intelligence for us that it was "all right again." The machinery was once more set in motion, the cable was soon going out at the rate of six miles an hour, and the electrical signals were passing between the ships as regularly as if nothing had occurred to interfere with or interrupt the continuity. No explanation could be given as to the cause of the accident, that was to be relied upon. It was supposed, however, that it had broken on board the Agamemnon, and that the end was secured and spliced before it could get out of the ship. This is favored by the fact that it would take an hour or so to make the splice, which was about the time that elapsed from the moment the continuity became imperfect till it was restored. Another reason, though probably not so good, was given—that the cable was subject to so severe a strain as to cause the parting of the copper wire or conductor, although the insulation remained perfect; and as soon as the strain was released the broken wires came together again, thus restoring the continuity. However it may have been, or by whatever scientific means it might be explained, the one fact was evident—the continuity was "all right," and we were satisfied. We were alarmed by no more unpleasant reports this night, and retired to bed—some to sleep, and some to spend a restless night in anxious fears about the safety of the cable and in feverish hopes of success.

As every thing relating to the electrical department must be of deep interest during the process of the work, we are determined to visit the electricians' office, which is situated in that little corner close by the wardroom coil—a point to which no one on board can look without apprehension when he reflects that at any moment a messenger may start from it with the dread announcement that the continuity has taken flight. That is where the subtle current which flows along the conductor, a part of which is now submerged in the great ocean depths, is generated, and where the mysterious apparatus by which electricity is weighed and measured, as a marketable commodity, is fitted up. In that little apartment, which will not hold more than five persons, one of the operators sleeps, because there is no room for him to sleep elsewhere, every available place being already occupied. The electricians' office is never left without a watch, day or night, and every movement of the little needle that tells the existence of the current in the cable is watched with the greatest interest. A brief description of what this apartment contains will give the reader an insight into all the operations that are performed therein.

A system has been devised for transmitting and receiving signals through the cable from ship to ship, during the process of paying out. This has been done by Mr. Laws and Mr. De Sauty, the two gentlemen who have charge of the electrical department on board our ship, and was accepted by the directors of the company, and made an order of the Board, by their minutes of June 7, 1858. It consists of an exchange of currents sent alternately during a period of ten minutes by each ship, which not only serve to give an accurate test of the continuity and insulation of the conducting wire, but also to give certain signals which are required to be sent when the ships are far apart. For instance, every ten miles of cable paid out is signalized from ship to ship, as also the approach to land or momentary stoppage for splicing, shifting coils, &c. The electrical apparatus employed on board the two vessels is not very complicated, and is simply composed of testing instruments, wholly different from those to be used for the transmission of messages when the ends of the cable shall be landed.

The electric current is generated by sand batteries consisting of plates of zinc and copper, about fourteen square inches each, arranged by pairs. These plates are immerged in a solution of sulphuric acid and water, mixed with saw dust, for the purpose of preventing the liquid from overflowing. Two hundred and forty of these pairs are in operation on board of each ship. The instrument used for sending the current thus created through the line is an ordinary commutator, in the form of a reversing key, by which the operator can, at will, send the zinc of copper current of the battery into the cable, and by so doing change the nature of the signals. The current next passes through an electro-magnetometer, an instrument very useful for the purposes of testing. It is composed of an electro-magnet, the armature of which can be "furthered" or "approached" by a small screw, so as to require a stronger or weaker current to attract it. It shows the charge as every current flows into the cable and the discharge as it comes out. Before entering the line the electric current is made to pass through a second instrument, called the marine galvanometer, which was invented by Professor Thomson, of Glasgow University, one of the directors of the company. The magnetic needle, which is placed in the centre of a coil of wire, instead of marking its own deflections as in ordinary galvanometers, has a little mirror fixed to it, the reflection of which creates a small spot of light according to the deflections, moving on a horizontal scale of white paper, placed at about eighteen inches from the instrument itself. This instrument reports accurately the force of the currents, not only in the sending, but also in the receiving from the corresponding ship.

Besides this marine galvanometer, the only other instrument in circuit when receiving is the ordinary galvanometer usually employed for testing. According to the nature of the current received, the needle is deflected to the right or the left of a point marked zero on the dial, and where the needle is in a vertical position when no current is passing through the coil of wire surrounding it. Every one of the deflections read on the galvanometer, as also the charge and discharge indicated by the magnetometer, are carefully recorded, so that if a defect of continuity or insulation occurred it might be visible by comparison with those received before.

These are all the instruments in the electrical department, and this is a simplified explanation of their various uses, so that the unscientific can understand them.

Second Day—July 30.

All through the night the sound of the machinery never ceased, and the continuity remained perfect. At half-past three o'clock this morning the last flake of the forward spar deck coil began to run out, and considerable anxiety is manifested in regard to the change to that on the forward main deck, which is immediately beneath. Every precaution, however, has been taken to guard against accident, and by a quarter to four the agony is over; the first turn of the new coil has been reached, and the cable is going out in splendid style. The interest is now transferred to the main deck, for there is nothing further to attract the attention in the appearance of the circle which has just become vacant—nothing but the thick tar that covers the floor, the broken cone, and the rings or fair-leaders through which the cable passes before it runs over the bobbins that lead to the machine. Yet it would be wrong to say that there is little of interest in this circle, for have we not successfully paid out all the cable it contained; and who doubts we would find more pleasure in looking at all the circles when empty? The ease with which the line runs out of the ship at this distance from the stern, for we are now about two hundred and seventy feet from that point, is calculated to infuse new confidence into every one who sees it, but it is, after all, a confidence terribly shaken by vague fears of the future. We have five or six days to run before we get into Trinity Bay, and in that time, which, in our state of suspense, seems so many years, what may not occur? We are afraid even to think of success, so often have our hopes been blasted by disappointment; the very thought of the magnitude of the undertaking brings with it a feeling almost akin to discouragement. We know that the risk is doubled by the employment of two ships, while at the same time it must be acknowledged our chances of success are increased by thus reducing the time one half. But, again, in running the distance between the two points which it is designed to connect, there is the probability that either or both vessels will get into a gale, and in that event the prospect of laying the cable becomes fearfully dubious. Such a gale as that we have had—an eight-day affair—would very soon put an end to the undertaking, and still the work appears easy and practical enough. Follow the course of the cable as it comes out of the coil, passes over the bobbins, round the sheaves of the paying-out machine, and so on till it goes overboard, and you will be fully impressed with its practicability. Yet what is the reason that all the attempts hitherto made have failed, you may ask? Why, if three hundred miles have submerged, is it not also possible to lay two or three thousand? This is a question which appears very simple, and which is yet rather difficult to answer. It is easy to say that the breaking of the cable is caused by defective machinery, but who is able to account satisfactorily for the break of continuity which occurred in June last, after forty miles had been paid out of both ships? This it is which raises the greatest doubts in the minds of all, and which makes even the most hopeful apprehensive as to the result. That word "continuity" has created more uneasiness and anxiety than any thing connected with the work, simply because it is seemingly beyond the control of scientific skill, and, once gone, cannot be restored by human ingenuity. At any moment we may hear that it has parted, and sleeping or waking, the fear that it will haunts us like a nightmare. Oh, how we long to see that bleak and barren, but to us, more desirable coast than any that ever met the gaze of enraptured voyager. What would we not give to be steaming up towards the head of Trinity Bay with the telegraph station in full view? Five or six days yet to run, at the end of which time we may be returning to Queenstown, again to bring the news of disaster and defeat. But we must not think of defeat now—we are bound for Newfoundland, and if Providence favors us, two or three weeks at the farthest will see us entering the bay of New York, after having successfully accomplished the greatest work ever undertaken by man. But let us see what progress we have made during the last twenty-three hours, for it is now twelve o'clock, and we have been paying out since one yesterday afternoon. The following table shows the distance run according to the different logs therein stated:

By observation,	89 miles.
By ship's log,	99¼ miles.
By engineer's log,	102 miles.
By patent log,	105 3-10 miles.

The length of cable paid out, according to the indicator attached to the machine, is 131 miles and 900 fathoms, or a surplus over the distance run, as shown by observation, of 42 miles and 900 fathoms, which is equal to about 48 per cent. This is a ruinous expenditure, and if it should continue at the same rate for the next two or three days, we might as well abandon the undertaking at once, turn our ship's head toward England, and make the best of our way back. It must not be forgotten, however, that in starting, a large amount of slack was allowed, so as to prevent an undue strain upon the cable before some fifteen or twenty miles should have been paid out. Of course, it is almost needless to say that we will be forced into no such expenditure during the next twenty-four hours. Besides, we expect to be able to run out the cable at the rate of seven and eight miles an hour yet, and experience has proved the faster it is paid out the loss is proportionably diminished. There is sufficient to allow a surplus of thirty per cent.; and if that should not be enough, we can land the end at the entrance instead of at the head of Trinity Bay, as was proposed in the event of our having sufficient for the purpose. The depth of water during the last twenty-four hours has varied from 1,600 to 1,975 fathoms, but it appears to have no effect upon the laying of the cable—in fact, the great depth of water is one of the least obstacles against which we have to contend.

The electrician on watch has just reported to Mr. Field that he received a despatch at twenty-one minutes past two from the Agamemnon, which is now some two hundred and thirty miles off, and that they had paid out from that vessel 150 miles; and at thirty-six minutes past two we inform them by electric signals that we have laid the same length. This shows that she is ahead of us by fifteen minutes, which is equal to a mile and a half. We have thus far got along most successfully, but the remembrance of that unpleasant incident about the continuity still clings to our minds, and forbids us to indulge in any sanguine expectations. The weather, too, is beginning to look unfavorable; and, what is still worse, the barometer is falling, though slowly. A gale at this particular time would be a most unwelcome visitor, and we trust that although Lieutenant Maury was wrong in his meteorological calculations about the month of June, he will turn out to be correct on this occasion. The sky is overcast with gloomy-looking clouds, and the appearance of the horizon is very threatening and squally. The barometer has fallen half an inch, and has still a downward tendency, while the wind is slowly but steadily increasing. It is evident that we are in for it, unless those indications which have never deceived us before are at fault this time. The wind continues to increase towards evening, but up to seven o'clock it has not reached the magnitude of a gale. It is only blowing fresh—what sailors would call a stiff top-gallant breeze, and as long as it keeps at that we are all right, and have nothing to fear. Nine o'clock, and still no gale; but unless the barometer is astray, we will catch it some time during the night. Ten o'clock has just struck, but, strange to say, the wind is going down, and the sea is following the example. It is to be hoped it will stay down, and remain so till we get into New York, for we have had quite enough of it already, and have learned by experience that a smooth sea is preferable to "rolling billows" at any time. The night is clearing up, and through the patches of sky which are seen through openings in the drifting and broken scud, the quiet stars are peeping out. The would-be gale is literally used up, and we have a calm and beautiful night for the continuance of our work. Confidence is rising rapidly, and the bids in favor of its success are becoming quite heavy in the imaginary stock market which has been established on board. When it was reported that the continuity was not so perfect as we could wish, stocks went down with a terrible rush, and there were no bidders at any price. But twenty-four hours decided the matter; the Atlantic telegraph ran up to fifty per cent., and continued going up till it reached the remarkable figure of seventy-five. The cable is, indeed, the absorbing subject of conversation on board, and other things are only spoken of as they bear some relation to it. That group of sailors near the cook's galley are engaged in an animated discussion on the all-prevailing topic. One of the number is trying to persuade his messmates that it is impossible to lay it; but they lend him a rather unwilling ear, and are evidently more strongly inclined to the other view of the subject. Among them, too, is the same individual who delivered his opinion with such emphasis some time ago on "continuity," but who has since become a most sincere convert, and a firm believer in the faith that the cable can be laid. The very messenger boys are as deeply interested in the subject as the oldest tar on board, and at their head stands a bright-looking lad, who was rewarded the other day by Mr. Field for the look-out he kept for the Agamemnon. In the enthusiasm which has succeeded the hopeless despondency, and in which nearly the whole ship was sunk, a sort of veneration has sprung up for every thing with which the cable has been placed in contact. Some have designs upon the pieces of planking which formed the floor of the circles in which it has been or is coiled, and specimens of the cable itself are more highly prized now than they ever were before. Nothing is thought of during the day but the cable, and at night I believe two-thirds of the crew don't dream of any thing else. We have all become superstitious, and the man who has the most auspicious dreams is as eagerly listened to as if he were an infallible oracle.

"I dreamed last night," said one of these, "that we had laid the cable, and there was not a single break in it; and my dreams always come in true, as M. can tell you; for I told him a thing that he found out had happened exactly at the time revealed to me." This was considered by some as proof positive, while those who looked with contempt at prognostications, auspicious dreams, auguries, omens, and such like, smiled upon the dreamer with indulgent consideration. They were evidently pleased to listen, and although they would emphatically have contradicted the charge of being superstitious, the gratification which they manifested had somewhat of a leaning in that direction. Whether they are or are not superstitious, we hope the dream will be fulfilled, however, and that the Agamemnon as well as the Niagara will succeed in accomplishing her share of the work. If we should pass over another day in safety there will not be a single sceptic on board; for those who were the most incredulous are fast giving way before the strong evidence with which they have been presented in the last twenty-four hours. The feeling of confidence in the prospects of to-morrow is greatly strengthened by the facility with which all the operations are carried on, and by the admirable manner in which the paying-out machine works. Let the continuity remain perfect and there will be no difficulty.

Third day—July 31.

The desperate effort which was made yesterday by the barometer to get up a gale proved a total failure, and we have now one of the finest days for cable laying we have had during this expedition. The index hand pointed 29.64 still, but the wind would not come, the sea refused to rise without some provocation, and so the date of the storm was postponed indefinitely. There is, however, a thick mist, through which the Gorgon is indistinctly visible a short distance in advance on our starboard bow; but this is already beginning to disappear, and before noon the horizon will be perfectly clear. The first point of attraction is the coil, for if the cable is running from it freely you may be certain that all is right. The coilers who sit on the margin of each flake are amusing themselves in the intervals of their work by manufacturing little balls out of the tar, which has become hardened by exposure to the air, and throwing them down before each turn as it is taken up from the coil. As the cable passes out at the rate of from seven to eight miles an hour, it strikes these balls with considerable force while it courses round the circle, sending them before it with still greater speed. The rate at which they run depends to a great extent on their spherical form, and he who makes them roundest is generally the winner. As no bets, however, are offered or made, no pecuniary advantage accrues to any of the parties concerned. Occasionally a lump of chalk, a small potato, or a piece of wax candle is entered for the race, in which the chalk generally comes out ahead. As it is impossible for any accident to occur from this, and as it affords a harmless amusement to the men, without interrupting the work, they are not interfered with. They are always ready at the end of each flake to lead the cable into the centre, and perform the operation so well that a kink is almost a matter of impossibility. It is a pleasure to look upon their earnest, eager faces, and observe the care with which they handle the line while passing it from the outer edge of the circle to the cone. Although this operation requires to be repeated about fifty times a day, they always perform it successfully. If they allow a single kink to take place the expedition might be considered as at an end, for it would be next to impossible to remedy the damage. Not a man among them who does not know that, and who does not realise the full importance of the duty with which he is entrusted. The reader must by this time be aware that in paying out the cable, the greatest caution has to be observed to prevent it from kinking, and as there is a much greater tendency to kink near the cone, which is in the centre of the circle, than as you approach the circumference, the ship is always slowed down about five minutes before the last or outermost turn is taken up. As soon, however, as this critical part of the work is safely performed, word is passed to the engineer to "go ahead," and immediately after the huge propeller is again revolving with its former velocity.

Contrary to the predictions of some, the change from the forward main deck coil to that on the deck immediately below, took place at half-past five this afternoon. It was thought that we would not have it all paid out before midnight, but the speed had been somewhat increased during the last twenty-four hours, and the rapidity with which flake after flake passed out satisfied those on watch that the coil would be exhausted long before the time announced. At least an hour before the change was made the outer boundaries of the circle in which the cable lay was literally crowded with men, and never was greater interest manifested in any spectacle than that which they exhibited in the proceedings before them. There were serious doubts and misgivings as to the successful performance of this important part of the work, and these only served to increase the feeling of anxiety and suspense with which they silently and breathlessly await the critical moment. The last flake has been reached, and as turn after turn leaves the circle every eye is intently fixed on the cable. Now there are but thirty turns remaining, and as the first of these is unwound, Mr. Everett, who has been in the circle during the last half hour, gives the order to the engineer on duty to "slow down." In a few moments there is a perceptible diminution in the speed, which continues diminishing till it has reached the rate of about two miles an hour.

"Look out now, men," says Mr. Everett, in his usual quiet, self-possessed way. The men are as thoroughly wide awake as they can be, and are waiting eagerly for the moment when they shall lift the bight of the cable, and deliver it out safely. One of the planks in the side of the cone has been loosened, and just as they are about taking the cable in their hands, it is removed altogether, so that as the last yard passes out of the now empty circle, the line commences paying out from the circle below, or the "orlop" deck coil, as it is called. The men, who are no other than the coilers, or "Knights of the Black Hand," as they have not inappropriately been termed, have done their work well, and the applause with which they have been greeted by the crowd of admiring spectators is the most gratifying testimony they can receive of the fact. They have hardly passed the cable out of the circle before they are received with as enthusiastic a demonstration of approval as the rules of the navy will permit. Such a clapping of hands was never heard at the Academy of Music, and if they had only been indulged a little, they would have raised such a cheer as would have aroused old Neptune from the profoundest depths of his marine dominions. The hatches, which were covered over in the construction of the circle, are opened, and the daylight is thrown upon the top of the coil, from which the first flake is now being paid out. The same scene is presented as that exhibited in all the coils during the paying-out process, except that the rather dim daylight which penetrates to this deck renders the aid of candles a matter of absolute necessity. The removal of the hatches discloses to the view of those above the Knights of the Black Hand sitting, or rather crouching in a very unknightly manner, on the top of the cable, as the narrow space between it and the beams of the deck will not allow them to take a more erect or graceful position. Two dozen candles and a half-dozen lamps illuminate the circle: for, after all, it is hardly worth while saying any thing about the dubious instalment of daylight which is given here. It is certainly a strange spectacle, that cable paved circle from which the black line is rapidly ascending to the deck above, on its way to the bottom of the ocean—those men who seem to have been placed there for no other purpose than to look at it as it passes upwards—and lastly, that superintendent, who sits on the outside of the circle, and whose presence is necessary to make the scene perfect. But those men have been placed there for another purpose, and a most important one, too. There they sit, it is true, and in a rather uncomfortable position for the time being, but wait until the last turn of this flake is about leaving the circle, and you will see them display the greatest activity. Now they seize it in their hands and run with it towards the centre or cone, so as to prevent the possibility of a kink when the change from the long to the short turns takes place, and when this task is accomplished they return to their places, until they are again summoned forth to a repetition of the same operation.

In a few minutes the excitement attendant on this important operation ceases, but as we approach our destination, and our chances of success increase with every hour, the feeling of suspense and anxiety becomes absolutely painful. This is our third day, and since the two ships started from mid-ocean we have paid out a greater length of cable than was ever laid before. We hardly dare ask ourselves if we shall lay the line the whole distance—it seems too much to hope for—and we dread to think of the future. We count the day not by hours, but by minutes, and retire at night not to sleep, but to think through the tedious and weary moments of the all-absorbing subject. The sound of the machinery has become as familiar to us as that of our own voices, and when it is drowned in any other noise we listen with eagerness to hear it again.

The barometer is consulted hourly and its variations watched with a jealous eye, for we can now appreciate fully how much depends upon the weather. So far we have been greatly favored, but who can tell what another day may bring forth; and the weather-wise insist that the barometer never falls so low without a gale. The anticipation of such a thing is certainly not calculated to set one's mind at rest, beleaguered as it is by the fear that some untoward accident may happen to the Agamemnon which would cause the rupture of the cable.

At twelve o'clock to-day, we were in lat. 51 deg. 5 min., lon. 38 deg. 28 min., having made the following run:

	Miles.
Distance made good by observation,	137
By ship's log,	141½
By engineer's log,	142¾
By patent log,	137 6-10.

—while the length of cable paid out during the preceding twenty-four hours was 159 miles 843 fathoms, showing a surplus of 22 miles over the distance run, which is an expenditure of seventeen per cent. The depth of water varied from 1,657 to 2,250 fathoms. Wind east by south-east. The Agamemnon informed us at a quarter to three o'clock, P. M., by telegraph signal, that they had paid out 300 miles of cable up to that time.

Fourth Day—August 1.

Confidence is growing stronger, and there is considerable speculation as to the time we shall reach Newfoundland. The pilot who is to bring us into Trinity Bay is now in great repute, and is becoming a more important personage every day. His opinion is solicited in regard to the weather, as he is supposed to know something about it in these latitudes, and he is particularly catechized on the navigation of the bay and the formation and character of the coast. We are really beginning to have strong hopes that his services will be called into requisition, and that in the course of a few days more we will be in sight of land. The night has passed without accident, the barometer is rising, and the wind has gone round to the north-west, a sure indication that we will have clear weather. But the sea is not at all so smooth as it was the day before; it is in fact so rough as to favor the belief that there must have been a severe gale a short time since in these latitudes. The wind is also very perceptibly increasing, and there are serious misgivings that we are going to have that threatened gale now. The condition of the vessel is such as to alarm us greatly for the safety of the cable, should it come on to blow very hard, as the large amount already paid out, and the quantity of coal consumed, have lightened her so much as to render her rather uneasy in a heavy sea. The barometer is still rising, and rising very rapidly, but the wind is increasing, and although it has not yet attained the magnitude of a gale, it is blowing rather fresh for us in the present unsettled state of our feelings. It is not a head wind, however, and that is greatly in our favor. Both wind and sea are nearly abeam, and the rolling motion which the latter creates brings a strain upon the cable which gives rise to the most unpleasant feelings. The sea, too, seems to be getting worse every minute, and strikes the slender wire with all its force. Every surge of the ship affects it, and as it cuts through each wave, it makes a small white line of foam to mark its track. The sight of that threadlike wire battling with the sea, produces a feeling somewhat akin to that with which you would watch the struggles of a drowning man, whom you have not the power of assisting. You can only look on, and trust either that the sea will go down, or that the cable may be able to resist the force of the waves successfully. Of the former there is very little prospect, but of the latter there is every reason for hope. The struggle has been going on now for several hours, and there is no more sign of the cable parting than when it commenced. The electricians report the continuity perfect, and the signals which are received at intervals from the Agamemnon, show that that vessel is getting along with her part of the work in admirable style. What more can we desire? Yes, there is something more; for, although we are doing so well, we are unreasonable enough to wish we were doing better, or rather to wish that we had done altogether, and were safe in Trinity Bay, after landing the cable. We are still more unreasonable to wish that we were steaming up the bay of New York; and that, after this terrible contest between fear and hope, we were once more at home and among our friends—at home, to tell them of all we have seen and all we have done—how we have failed or succeeded, as Providence only can determine. We have known what it is to be defeated again and again; and, although some of us have suffered much from anxiety and watching, we can hardly tell what an excess, what a wild delirium of joy, success may not create among us. But this is anticipating what may never happen; for, although we have been successful thus far, who can say we will continue so to the end?

It would seem impossible that where there is so much anxiety and mental uneasiness, the most ludicrous affair could excite even a smile; and why it should be otherwise let the philosophic say. An incident illustrative of this remark was afforded this afternoon, just about dinner time.

"Well," said a member of one of the messes, approaching some of his associates, "well, it is done at last."

"What is done?" said half a dozen, with the most impatient haste; "What is done, the cable?"

"The cable? No, dinner is done!" he replied, with a tone of disgust that showed, however his comrades might regard his remark, he certainly did not intend it as a joke. They laughed, however, as much as if it were intended for one, probably more because his explanation relieved their minds from the apprehension that it was really the cable he spoke of. However improbable it may appear, there are some who seem to think less of their own lives than they do of the tarred line now running over the stern; and there are few who would not risk their own safety to secure that of the cable. This is paramount to all other considerations, and every one feels that it is so, from the apprentice boy up to the captain.

We have made a better run to-day than during any twenty-four hours since we started. At 12 o'clock we were in lat. 50 deg. 32 min., long. 41 deg. 55 min., having made from 139 to 145 miles, as is shown by the following:

Distance run by observation,	145 miles.
" Ship's log,	139 "
" Engineer's log,	142 "
" Patent log,	141 7-10

In running this distance we have paid out 164 miles 683 fathoms of cable, which shows a surplus of 19 miles 683 fathoms over the distance run by observation, or about 14 per cent. The depth of the water varies from 2,424 to 1,950 fathoms, and the wind, which blew from W. N. W., freshened very considerably. It did not, however, attain the force of a gale, and what was still more gratifying, began to fall as night approached, while the barometer continued rising.

Fifth Day—August 2.

At seven o'clock this morning a steamer was reported coming from the westward, and steering directly on our course. What vessel could it be? Not the Porcupine, which the British government despatched to Trinity Bay to look out for the Niagara on her arrival. No, it could not be the Porcupine, for she would not come out so far. It must be one of the Boston or New York steamers, which had followed the course of the Telegraph plateau for the express purpose of meeting and speaking the Niagara. Yes, it must certainly be from either of these places. A few minutes more, however, will place the matter beyond conjecture.

In half an hour from the time at which she was reported we discovered that she was a Boston steamer bound for Liverpool. On coming up to the Gorgon she slowed down, and finally stopped to make signals with our escort, from which she learned the mission on which we are employed, as well as the success that has attended us thus far. As it was impossible for the Gorgon to stop, the steamer turned off her course, and proceeded westward with her until she obtained all the information she could glean. Then stopping and waiting till we came up, she displayed a signal which we supposed indicated her number or name, but which we were unable to make out. Her deck was literally crowded with passengers, and from what we could see of them through the glass, it was evident that they were watching us with the greatest interest. Capt. Hudson had the telegraph flag displayed at the mizen, and as it is of somewhat gigantic dimensions, with the words "Atlantic Telegraph" wrought upon it in large letters, they had no difficulty in determining who and what we were. Then, too, if they could not discern the delicate line between our stern and the water, they must certainly have seen the wheel over which it was paid out, revolving with a speed that showed we were doing our work rapidly and well. The rate of paying out had reached seven miles an hour, and we were going through the water at from five to six. How different from the expedition of last year, when the speed of the ship hardly exceeded an average of four miles per hour! After watching us for fifteen or twenty minutes the steamer proceeded on her course, dipping her flag to us as she went—a compliment which was promptly returned. Less than an hour after she had disappeared below the horizon, and we could only trace her course by the black line of smoke she left along the sky.

There was a very heavy swell, like that left after a gale, during the whole of this day, and our ship rolled as she never rolled before, and as we had hardly considered her capable of doing. The cable, however, exhibited no sign of parting, and ran out at an angle with the water that showed that it was not affected by a strain greater than the eighteen hundred pounds which had been put upon the brakes. As for the machinery itself, nothing could be more perfect than the way it worked—no jarring, no irregularity of motion, but every thing in and about it was as steady and as perfect in its operation as clock-work. It has been running four days altogether, and is just as reliable now as when it was set in motion after the splice was lowered in mid-ocean. The tar which is pressed out of the cable as it passes over the grooved wheels, collects in large quantities; but the scrapers, which the wise foresight of Mr. Everett provided, prevent it from accumulating in the wheels and clogging their action. The brakes have never once failed, and never allow the strain upon the cable to exceed the pressure of the weights. They are properly called self-releasing, and although they can, by means of additional weights, be made to increase the pressure or strain upon the cable, yet, until those weights are still further increased, it is impossible to augment that strain in any other way. Whether we are successful or not, no fault can be found with the machinery. The ship may roll still worse than she does now—and that is bad enough—but it is not in the least affected by her motion, and pays out as steadily and as easily in a heavy swell as if there was not a ripple on the sea. The cloud of steam which rises from it, and which occasionally envelopes the operatives, proves how indispensable the use of water is in working the brakes, for the heat produced by the friction is so great, that if not kept down it would char and burn up the elm blocks in a very short time. Several gallons of water are consumed daily by the friction of the brakes, and thrown off in clouds of steam, sometimes as dense as that which is blown off by a locomotive. Large quantities of tar are pressed out of the cable as it enters and leaves the machine, and fall into tubs which are left near the machine for its reception. Of this stuff a couple of ordinary sized barrels full are collected each day and thrown overboard. It is all-pervading, and besmears every thing about it within a distance of twenty feet. The course of the cable is marked by one continuous black line, and small feathery-looking flakes of it are whirled through the air, besmearing every thing they touch. Some parts of the ship look as if a heavy shower of it had fallen, and in others it has become hard as it accumulated, and formed into little mounds. The front of the dynamometer has changed its original green color, and is now almost entirely black, while the operatives at work at and around the machine are covered with large patches of the same color. Yet with all its disadvantages it would be a difficult matter to get along without the tar, for it has proved the greatest preserver that could be found for the cable.

I have said that despite the bad weather and heavy sea the paying-out process was going on well, but during the night the continuity was again affected, and although it was restored and became as strong as ever, yet it was for about three hours a very unpleasant affair. It was subsequently found that the difficulty was caused by a defect of insulation in a part of the wardroom coil, which was cut out in time to prevent any serious consequences. There were only a few on board the ship, however, aware of the occurrence until after the defect was removed, and the electrical communication was re-established between the two ships. Both Mr. Laws and Mr. De Sauty, the two electricians on the Niagara, were of the opinion that the insulation was broken in some part of the wardroom coil, and on using the tests for the purpose of ascertaining the precise point, they found that it was about sixty miles from the bottom of that coil, and between three and four hundred from the part which was then paying-out. The cable was immediately cut at this point and spliced to a deck coil of ninety miles, which it was intended to reserve for laying in shallow water, and was therefore kept for Trinity Bay. About four o'clock in the morning the continuity was finally restored, and all was going on as well as if nothing had occurred to disturb the confidence we felt in the success of the expedition.

At noon we were in latitude 49° 52′, longitude 45° 87′, and had run, by observation, 154 miles, and by log as follows:

By ship's log, ...	144	miles.
By engineer's log, ...	141 6-8	"
By patent log, ...	141 3-10	"

The length of cable paid out was 177 miles 150 fathoms for the preceding 24 hours, which is a surplus of 23 miles 100 fathoms over the distance, or 15 per cent. The depth of water was from 2,385 to 1,600 fathoms. Wind north. The signals which have been received from the Agamemnon inform us that she is paying out at the rate of seven and eight miles an hour, from which we derive the assurance that she has fine weather, and that like ourselves, she is making the most of it. The night has set in fine; the barometer continues rising, and although the vessel still rolls considerably, we have had experience enough to tell us there is nothing to be feared from this motion. It is, however, impossible to throw off the feeling of uneasiness created by the interruption of the electrical communication, and those of us who have a more nervous temperament find it a difficult matter to sleep. The writer tried hard for something like four long hours to get into that blissful state of oblivion, but it was of no use; it was impossible to think of any thing else but the cable; and abandoning the attempt, he got up, and passed the remainder of the night in visits to the coil, to the machine, the stern of the ship, and the electrical department.

Sixth Day—August 3.

This is the anniversary of the day on which Christopher Columbus sailed on his voyage of discovery to America—is it to be still further signalized as one of those on which the work of connecting the Old and the New Worlds was accomplished? Heaven grant that it may be so, although it seems almost like presumption to hope. And yet there is a strong undercurrent of confidence that is often the precursor of success, although we are still about two hundred miles from land, and a kink in the cable, or a hole running through the gutta percha into the conductor—and through which you could not even force a hair—would render the labor of years utterly unavailing, we are so confident now, that we are calculating on seeing land to-morrow morning sometime about six o'clock, as the observation which was taken at noon to-day shows that it is not more than one hundred and fifty miles off.

The great work of this morning was the change from the fore hold coil to that in the wardroom, which are at least two hundred feet apart. This took place at eight o'clock in the morning, and as the time was known to all on board, there was even a larger crowd assembled to witness it than I observed at any of the other changes. It was considered a most critical time, and although the operation turned out to be very simple, it was anticipated by some with considerable uneasiness. The splice between the two coils had been made some hours in advance, and men were stationed all along the line of its course from the hold to the wardroom. Mr. Everett and Mr. Woodhouse were both on hand, the best men had been picked out to pass up the bight, or bend, when the last turn should be reached, and one man, named Henry Paine, a splicer, was specially appointed to walk forward with the bight to the after or wardroom coil. As the last flake was about to be paid out, the ship was slowed down, and by the time the last three or four turns came to be paid out, she could hardly be said to be moving through the water. The line came up more slowly from the hold, until they were nearing the bight, where it could not have been going out faster than half a mile an hour. One more turn and the bight comes up. There is not a sound to be heard from the crowd, who are watching it with eager and anxious faces from every point of view. No one speaks or has ventured to speak for the last minute, except the engineers, and they have very little to say, for their orders are conveyed in the most laconic style, and the quick "aye, aye!" of the men show that they understand the full value of time. "Now, men," says Mr. Everett, "look out for the bight," as those in the hold hand it up to the men on the orlop deck, and it is passed from hand to hand till it reaches the platform and long passage which has been built upon the spar deck for this part of the work. Here the bight arrives at last, and Paine takes it in his hand, paying out as he follows the line of the cable to the wardroom coil. How anxiously the men watch him as he walks that terrible distance of two hundred feet, and think that if he should happen to trip or stumble while he holds that bight in his hand, the great enterprise may end in disaster. It is not a difficult task, but how often have things that are so easily performed, been defeated by want of coolness. There is, however, such an easy self-possession about the man as he comes slowly after the long black line, that it inspires confidence. "All hands" have deserted the decks below, and follow him as he walks aft, and one in his impatience to get a glimpse of him, has nearly fallen through the skylight of the engine-room, in which he has smashed several panes of glass in the effort to save himself. "Pick up the pieces," says Paine, in a vein of quiet humor, as he proceeds on his course, without interruption, and coming up to the wheel, which is immediately above the wardroom, he straightens the bight, and the cable begins to run out from the top of the coil on the deck beneath. His work is done, and as the line passes out of his hands, he receives a round of applause from the hands of the spectators, who, but for those terrible navy rules, would have greeted him with a cheer that would have done his heart good. As it is, they must give vent to their feelings in some way, and the exclamations of "Well done!" "That's the fellow!" "By thunder, it's all right!" "Good boy, Paine!" are not a bad compromise after all. Besides, it might be rather premature at this time to indulge in any triumphant expression of feeling before we are even in sight of land.

All the signals we have received from the Agamemnon are most encouraging, and show that up to the present moment she has been as fortunate and successful as ourselves. If her per centage of loss does not exceed ours, she will doubtless land the end of her half of the cable at twelve o'clock to-morrow. As we have some sixty miles further to go before we reach the bay of Bull's Arm, which is at the head of Trinity Bay, we cannot accomplish our part of the work before seven or eight o'clock in the evening, and it is doubtful—on account of the condition of a portion of the cable which we have yet to pay out—whether we can do even that. The defective part, which was discovered yesterday in the wardroom coil, rendered it absolutely necessary to cut about sixty miles of it off, and to splice the severed end to the quarter-deck coil of ninety miles. This part of the line has been coiled so often, that it is bent and twisted to such an extent as to render it difficult to pay it out as fast as the other parts with safety. For this reason our landing will be delayed much longer than we expected, and it is hardly probable that we will be able to get into the bay of Bull's Arm before Thursday morning, the 5th instant.

The observation taken at noon to-day, places us in latitude 49 deg. 17 min., longitude 49 deg. 23 min., showing that we have run since twelve o'clock yesterday, 147 miles. Our run, according to the different logs, is as follows:

By ship's log, ...	137	miles.
By engineer's log, ...	138¼	"
By patent log, ...	134¼	"

In making this distance, 161 miles 763 fathoms of cable were paid out, which shows a surplus of 14 miles 613 fathoms expended, or an excess of ten per cent. The depth of water varied from 882 to 742 fathoms. Wind north-west.

At half-past two the Gorgon made a signal to us, which, translated from the numbers, reads as follows:

"I congratulate you on your success."

To this the following signal was sent:

"Accept my best thanks."

The weather was magnificent, and the surface of the ocean was hardly disturbed by a ripple. I have stated that the wind was W.N.W., and that is what the log of the ship says, but at times there was not enough to waft a feather, and the day was one of the mildest that this high northern latitude has ever seen. There was no indication of fog, unless the light summer haze that rested over the water could be tortured into the name. We saw several icebergs, some of the most gigantic dimensions, rising to an altitude of from fifty to a hundred feet. They were fashioned into a wonderful variety of forms, castles, towers, forts, Gothic church spires, columns, and one had a gigantic arch that seemed to rest on columns of emerald. The effect of the sun upon this was magnificent. The rays striking upon the clear green surface of the icy columns, the upper part of which were covered with a singularly fantastic fretwork, reflected themselves in all the hues of the rainbow. As our vessel proceeded on her course the position of the berg was entirely altered, and the great arch which we had seen but half an hour before, was transformed into a massive fort, with parapets and all the works of offence and defence. While looking at another, the crest of which rose above the water like a mountain peak, it fell apart, and sinking below the surface for a few moments, rose again in an entirely different form. One part resembled a large cliff with precipitous sides, in one of which was a miniature bay, on whose shores the swell of the sea broke in foam. The sky was one expanse of deep blue, except immediately over our heads, where a peculiarly beautiful corona of fleecy white clouds had rested. There was something so remarkable in its form and appearance, that those who felt inclined to look upon it as an auspicious sign, asserted that Heaven intended thus to crown our success, and mark its encouragement of the enterprise.

The calm that rested on the waters during the day was prolonged into the night, in the subdued darkness of which we can still discover some of the icebergs looming up above the water like immense rocks. There will be little sleeping on board the Niagara this night, for early morning will bring the long wished-for land in sight, and every one will be on the look-out.

Seventh day—August 4.

The morning of this day will be memorable in the history of the world, as that on which the Niagara first came in sight of the island outpost of the American continent, bearing to its shores one end of that great electric chain which is to destroy both time and distance, and bring the Old World into the closest communion with the New. It is an occasion only second to that on which the cable will be landed at the terminus of the great ocean line. And what a morning this is, so bright and so clear, within a few miles of the shores of a country which has been truly termed the land of fogs! There is not a breath of air, and were it not for its ever heaving pulse, the ocean would be as still and as motionless as the depths of the great plateau itself. As everybody is anxious to see the land, everybody is on the look-out. The men in the foretop are not satisfied with that elevation, and have gone up some fifty or sixty feet higher, while the main and mizen-masts have each a number of volunteers, every one of whom expects to be the first to report land. The forecastle has its look-outs too, although there is no prospect of their getting ahead of the others.

At seven o'clock land was reported from the main-mast, but the report was a little premature, for it was not really seen. About eight, however, the cheering cry of "land ho!" rang through the ship like a clarion note of triumph. Land at last, after six days of such anxiety and suspense as few men ever pass through—six days of weary watching, of feverish restlessness, and ending in nights that brought no repose. Land at last—yes, there it is, defined boldly and distinctly against the western horizon. Oh! friends at home, who believed we could not succeed, and who trembled as you read of that fearful gale, and the dangers through which we passed, had you seen the glowing faces, and the tears of joy that filled the eyes of all as we gazed upon the glad sight for hours, you too would have felt as we felt. With what deep earnestness we thought then of home, and how we conjured up before our mental vision the glad faces that would welcome us on our arrival! What a scene of wild excitement New York will present as the news that the "impracticable enterprise" has succeeded, and that in little more than a week the Niagara will make her appearance in its bay! But the voice of caution warns against too sanguine anticipations, and reminds us of the truth of the unwelcome proverb which everybody knows.

As we approach the land, we see more icebergs, some of which are floating in the bay, and others lying grounded on or near its shores. These bergs have assumed the most remarkable shapes, and are undergoing singular changes. There is one suspended in mid-air, over another, of which it is a perfect, though inverted fac simile. The land itself appears to be undergoing no less wonderful transformations, and where but a few brief minutes ago there was nothing visible but the rugged and wild-looking coast mountains, towns and villages have sprung up, as if the barren shores had been touched with a magician's wand and become an enchanted land. Far off, as far as the vision can reach, appears a stupendous railroad bridge, supported by a hundred abutments; but hardly has the eye rested on it before the abutments fade away, and a mountain with its peaks downwards and its base suspended in air takes its place. What strange land is this that startles the mind with its wonders? It is bleak, barren, rocky, foggy, mountainous Newfoundland, and there before us is the entrance to Trinity Bay, near the head of which the cable is to be landed.

The cities, and villages, and mountains suspended in mid-air with their peaks downward, are simply so many forms of the mirage, on which we have been gazing in bewildered astonishment for several hours past.

It is now half-past two o'clock, and we are entering Trinity Bay at a speed of seven and a half knots an hour, paying out the cable at a very slight increase on the same rate. The curve which it forms between the ship and the water proves that there is little or no strain upon it, and proves also another thing, that it can be run out at eight, nine, and I believe ten miles with the greatest safety. This, however, as I have previously stated, cannot be done with old cable that has been coiled so often as to have a tendency to kink, and there is, as has been already intimated, some of this kind which we will be obliged to pay out before landing. A signal, signifying "all well," has been received from the Agamemnon, which must now be on the point of landing her cable in Valentia Bay, Ireland, which is about 1,640 miles from our present position.

There is as yet no sign of the Porcupine, the steamer which was sent out by the British government to await our arrival, and render us any assistance we might require; and we fear she has gone round to St. John's, having abandoned all hope, after our failure in July, of ever seeing the Niagara. The only sign of life we have yet seen is that presented by a few fishing smacks, whose occupants seem to know who and what we are, but who, with one exception, have not exhibited the slightest enthusiasm. This individual waved his hat three or four times, and gave other indications of his pleasure at seeing us, and this is the only demonstration we have yet received of a private or public character.

A few minutes past five a steamer was reported in the bay, and soon after she was made out to be the Porcupine. In half an hour, her commander, Captain Otter, came aboard, and had a consultation with Mr. Field and Captain Hudson. He had, he said, given up all hope of seeing the Niagara, but had nevertheless posted look-outs on Bull's Island, which commands a view of the bay and a long distance out to sea. The minute he heard of her arrival he sent a telegraphic despatch to St. John's, to notify the people there of the fact. Mr. Field himself soon after went up to the telegraph station, which is fifteen miles from where our ship now is, with despatches for New York, and which, allowing for the difference in time between the two places, will be received there to-night at least an hour earlier than they are sent.

The Gorgon hoisted the American flag some hours ago at the fore, and the Niagara carries the English at the fore, while the telegraph flag floats from her mizen. Our progress up the bay is rather slow, on account of the condition of the cable, already alluded to; and it is now settled that we cannot get to our landing-place near the station before to-morrow morning. We are paying out the cable at three miles an hour, and as it is dark, the Porcupine goes ahead, and leads the way towards the Bay of Bull's Arm. The bleak mountains loom up through the night, and a huge bonfire, which has been built up in honor of our arrival on a neighboring hill, throws out columns of dense black smoke and great tongues of flame. It is a strange scene, of which our ship is now the centre, and in which she is the principal object. The moon has not yet risen, but it is not so dark as to prevent your seeing, though indistinctly, to a considerable distance. The after-deck coil, from which the cable is now going out, is illuminated with lamps, and about a dozen men are standing around the circle, ready to pounce upon any kinks that may make their appearance. The work is continued successfully to the end of this day; and as there are but a few more miles of cable to be paid out, it will be landed to-morrow morning.

According to observation to-day, the latitude was 48° 17′, longitude 52° 43′, showing the distance run to be 146 miles. The length of cable paid out was 154 miles 360 fathoms, the loss on which did not exceed 6 per cent. Depth of water from 742 to 200 fathoms.

LANDING OF THE CABLE.

Eighth Day—August 5.

At ten minutes past two this morning preparations were made for the landing of the cable, and the Niagara is brought to an anchor for the purpose. It is still quite dark, and we can only see the outlines of the hills which tower above us on every side, showing that we are in a completely landlocked harbor. We have just received the news from the electricians that a telegraphic despatch, or signal, has been sent from the Agamemnon, informing them that a thousand and ten miles of cable have been paid out from that ship up to the last hour. The intelligence is peculiarly gratifying at this time, and adds to the enthusiasm which every one feels. The operators have been at work all day and night, and still labor with as much zeal as at the commencement. Nobody has thought of going to bed, except a few who are so exhausted by their long watching as to render rest a matter of imperative necessity. Three of the Niagara's boats have been lowered, and two of these are to hold or buoy the cable at some distance from the stern of the vessel while the third receives a sufficient length to reach the telegraph station, which is about half a mile from the shore. As the Niagara has been brought to anchor, the cable is paid out over the machine with the aid of the little steam engine, which is put in gear with the paying-out sheaves. About a mile and a half is lowered and coiled in the boat, and by sunrise every thing is ready for the completion of the work. There is such a singular coincidence connected with this very part of the cable which is now about to be landed, that it deserves particular mention here. By reference to the account of the expedition of last year, it will be seen that the laying of the cable was commenced at Valentia Bay, Ireland, on the 5th of August, and that over three hundred miles of it had been paid out before it parted on the 11th of the same month. Some time after fifty or sixty miles were recovered, and this is a part of the same cable which is now about being landed. It is also somewhat singular that the cable was broken on the 29th of June last and spliced again on the 29th of July.

Before the landing of the cable, Captain Hudson notified the Captains of the Gorgon and Porcupine, and about five o'clock the boats of the Niagara were ranged in a regular line and connected with a hawser, to tow that on which the cable was coiled to the landing-place. The telegraph flag was displayed from the mizen truck, while the English flag was hoisted at the fore, and the American at the mizen peak. A similar compliment was paid to the American flag by the British vessels; and soon after our boats pushed off from the ship we observed others coming from the Gorgon and Porcupine to participate in the consummation of the great work. All the officers of the Niagara, with the exception of those on watch on the ship, were in the boats, the crews of which numbered altogether about sixty men. These, with the crews from the boats of the British ships, and all the officers, English and American, made a total of about one hundred men. The demonstration was certainly any thing but a pageant, for there were none of those accessories which make up what is generally understood by the word;

but there could be none who were imbued with a higher appreciation of the character of the occasion, nor who were better qualified to do it honor; and it is doubtful whether the presence of thousands would have added any thing to its importance or solemnity. It would be a difficult matter for one who has seen nothing but civic processions to form an idea of that which attended the last act in the completion of this enterprise. The scene, the circumstances, all conspired to render it totally different from any celebration the world has ever seen.

The Bay of Bull's Arm is an inlet of the sea at the head of Trinity Bay, from which it runs, between a range of irregular hills, a distance of about ten miles. Some of these hills rise to the dignity of mountains, which are in many places wooded down to the water's edge. The inhospitable nature of the climate, combined with the barren and rocky soil, is rather unfavorable to vegetation, and the forests are composed mainly of a stunted variety of pine, which seldom attains a height of more than 30 feet; while the turf, which in some places covers the rocks to the depth of three or four feet, is overspread with a thick growth of moss. The streams, which during the summer season become mere rivulets, are converted into foaming torrents by the freshets which follow the breaking up of the long and dreary winter. Judging from the hilly and mountainous character of this part of the country, and, indeed, of the whole island, the construction and establishment of railroads in the far distant future must prove a terribly expensive affair. The landing-place for the cable is a very picturesque little beach, on which a wharf has been constructed. A road, about the dimensions of a bridle path, has been cut through the forest, and up this road, through bog and mire, you find your way to the telegraph station, about half a mile distant. Alongside of this road a trench has been dug for the cable, to preserve it from accidents, to which it might otherwise be liable.

When the boats arrived at the landing the officers and men jumped ashore, and Mr. North, first lieutenant of the Niagara, presented Captain Hudson with the end of the cable. Captain Otter, of the Porcupine, and Commander Dayman, of the Gorgon, now took hold of it, and all the officers and men following their example, a procession was formed along the line. As the cable was covered with tar, the handling of it was rather objectionable, but there were none who, under the circumstances, refused to take a part in the landing. There were some, it is true, who would not at first put their bare hands to it, and who sought to protect them with gloves, or by covering the cable with moss. This movement, however, was rather unpopular; so the gloves were taken off, and although part of the moss adhered to the cable, there was little of it used afterwards. The road or path over which we had to take the cable was a most primitive affair. It led up the side of a hill a couple of hundred feet high, and had been cut out of the thick forest of pines and other evergreens. In some places the turf, which is to be found here on the top of the highest mountains, was so soft with recent rains that you would sink to your ankles in it. The road-maker or road-makers, whoever they were, had evidently done all in their power at the short notice they had to make it passable, and it is enough to say they succeeded to that extent, although we could not help wishing that they had not placed the stepping-stones so far apart, and had been a little more liberal in the use of timber. Well, it was up this road we had to march with the cable, and a splendid time we had. It was but reasonable to suppose that the three captains, who headed the procession, would certainly pick out the best parts, and give us the advantage of the stepping-stones, but it appeared all the same to them, and they plunged into the boggiest and dirtiest parts with a recklessness and indifference that satisfied us they were about the worst pilots we could have had on land, despite their well-known abilities as navigators.

This memorable procession started at a quarter to six o'clock, and arrived at the telegraph station about twenty minutes after. The ascent of the hill was the worst part of the journey, but when we got to the top, the scene which opened before us would have repaid us for a journey of twenty miles over a still worse road. There beneath us lay the harbor, shut in by mountains except at the entrance from Trinity Bay, and there, too, lay the steamers of the two greatest maritime nations in the world. On every side lay an unbroken wilderness, and if we except the telegraph station, at which we will soon arrive, not a single habitation to tell that man has ever lived here.

Never was such a remarkable scene presented since the world began. Even now, at the very point of its realization, it does not seem as if the work in which we have been engaged has been accomplished. Looking back on the past, the seven long days of anxiety and suspense appear but as one, and it is almost impossible for the mind to comprehend the great fact that the cable is really laid. It would seem like a dream, were it not for the visible, palpable evidence which we now hold in our hands, the electric chain which binds the two worlds together. No, it is not a dream, but a great reality, the announcement of which will startle the incredulous and unbelieving of both continents. The continuity, without which the cable would be utterly valueless, is as perfect now as it ever was. Mr. D. Laws and Mr. De Santy, the two chief electricians, who have accompanied us from England, have "tasted" the current, and about a dozen others at the head of the procession have done the same thing. The writer himself is a witness on this point, and will never forget the singular acid taste which it had. Some received a pretty strong shock—so strong that they willingly resigned the chance of repeating the experiment.

About twenty minutes after we started from the beach we reached the station of the Atlantic telegraph on this side of the ocean, where we found some half dozen of the inmates awaiting our arrival. The station is a large frame building, two stories high, and eight windows wide. On the first floor is a kitchen, an office and a sitting apartment, dignified with the title of parlor. The door opens on the side of the house, and there is no means of exit from the front, for the simple reason that the first story is eight or ten feet from the ground. This singular arrangement is explained by the fact that the building is situated on the side of a hill, and that there is a considerable difference between the height of the front and back walls. The second story is divided into sleeping apartments separated by a single corridor, and the whole establishment will lodge about a dozen persons. A beginning has been made in the clearing away of the forest in the immediate vicinity of the house, and in the course of a year, they will have as pleasant and as comfortable a dwelling perhaps as any in Newfoundland, although it may not have all the luxuries of civilized life. Of the details of domestic life at the telegraph station more will be said hereafter. Meantime we must continue the particulars of our narrative.

On the arrival of the procession the cable is brought up to the house and the end placed in connection with the instrument. The deflection of the needle on the galvanometer gives incontrovertible evidence that the electrical condition of the cable is satisfactory. The question now is, how shall we properly celebrate the consummation of the great event? How, but by an acknowledgment to that Providence without whose favor the enterprise must have ended in disaster and defeat. Every one feels that this is all that is necessary to make the celebration complete, and to mark the undertaking as the work of two great Christian nations. When, therefore, they all gathered together before the telegraph station, they understood the purpose for which they were assembled. Captain Hudson took up his position on a pile of boards, the officers and men standing round amid shavings, stumps of trees, pieces of broken furniture, sheets of copper, telegraph batteries, little mounds of lime and mortar, branches of trees, huge boulders, and a long catalogue of other things equally incongruous.

"We have," said the captain, "just accomplished a work which has attracted the attention and enlisted the interest of the whole world. That work," he continued, "has been performed, not by ourselves; there has been an Almighty Hand over us and aiding us; and without the Divine assistance thus extended us, success was impossible. With this conviction firmly impressed upon our minds, it becomes our duty to acknowledge our indebtedness to that overruling Providence who holds the sea in the hollow of his hand. 'Not unto us, Oh Lord! not unto us, but to thy name, be all the glory.' I hope the day will never come when, in all our works, we shall refuse to acknowledge the overruling hand of a Divine and Almighty Power. It is He who can rebuke the winds and calm the seas. He works in a mysterious way for his people. His path is on the mighty waters. We have seen his power in the tempest; and when we have called upon Him in the time of trouble, He has heard our voice. And yet how ungrateful we are for all His favors, and how soon we forget Him when the trouble passes away like the summer cloud or the morning dew. On a solemn occasion like the present, we should feel more particularly our indebtedness to Him, and it is with a feeling of heartfelt gratitude we should acknowledge the many favors which He has bestowed upon us. There are none here, I am sure, whose hearts are not overflowing with feelings of the liveliest gratitude to Him, in view of the great work which has been accomplished through His permission, and who are not willing to join in a prayer of thanksgiving for its successful termination. I will, therefore, ask you to join me in the following prayer, which is the same, with a few necessary alterations, that was offered for the laying of the cable:

"'O, Eternal Lord God, who alone spreadest out the heavens and rulest the raging of the sea, who hast compassed the waters with bounds till day and night come to an end, and whom the winds and the sea obey—look down in mercy, we beseech Thee, upon us, Thy servants, who now approach the throne of grace, and let our prayer ascend before Thee with acceptance. Thou hast commanded and encouraged us in all our ways to acknowledge Thee, and to commit our works to Thee; and Thou hast graciously promised to direct our paths and to prosper our handiwork. We desire now to thank Thee, believing that without Thy help and blessing nothing can prosper or succeed, and we desire humbly to commit all who have been engaged in this undertaking to Thy care, protection and guidance. It has pleased Thee to enable us to complete what we have been led by Thy providence to undertake, that being begun and carried on in the spirit of prayer and in dependence upon Thee, it may tend to Thy glory, and to the good of all nations, by promoting the increase of unity, peace, and concord. May Thy hand of power and mercy be so acknowledged by all, that the language of every heart may be "Not unto us, O Lord; not unto us, but unto Thy name, give glory;" that so Thy name may be hallowed and magnified in us and by us. Thou hast controlled the winds and the sea by Thy almighty power, and granted us such favorable weather that we were enabled to lay the cable safely and effectually. Finally, we beseech Thee to implant within us a spirit of humility and childlike dependence upon Thee; and teach us to feel, as well as to say, "If the Lord will, we shall do this or that." Hear us, O Lord, and hear us in these our petitions according to Thy previous promise, for Jesus Christ's sake.'"

The "Amen" which followed the conclusion of this prayer showed what a sincere response it received from the hearts of all present, and the depth of feeling it excited. "You recollect," proceeded the Captain; "what our Saviour told his disciples, that if they had faith, even as a grain of mustard seed, they could move mountains. We have performed a work, or rather we are thankful to God for having performed a work for us, which has been ridiculed by a great many who regarded it as an impossibility. We have been peculiarly favored in being permitted to be His agents, and we are pleased to acknowledge that it was through His instrumentality the work was performed."

At the close of the foregoing remarks the audience of "cable layers" dispersed, some to amuse themselves in short excursions about the grounds adjoining the station, and others to explore the mysteries of the building itself. About an hour after, the captain, officers and men assembled on the beach where the cable had been landed, and where they re-embarked for their several ships. Up to this point, every thing had been conducted with silence and in a spirit of moderation, which some might consider ill-suited to the greatness of the work, and the feeling which the occasion might reasonably be supposed to call forth. Had such a scene occurred in the harbor of New York, it would have been impossible to restrain the wild enthusiasm and excitement of the people. And who is there under the circumstances that would desire to do so? But the men who laid that tarred line across one half of the Atlantic, and who had passed six days in anxious watching, in terrible suspense and in the midst of apprehension, one day hoping against hope, and the next fearing when the prospect appeared brightest, thinking of the one thing by day and dreaming of the one thing in their short and troubled sleep, until it seemed as if on that slender cable their very lives depended, and the accident that proved fatal to its safety were to put an end to their existence—these men were not devoid of enthusiasm. No, no; there was no want of enthusiasm among them; but it was determined that they should not give vent to it till the work was wholly accomplished—till the cable was landed, till they had carried the end in safety to the telegraph station, and till they had returned thanks to that Providence whose agents they were in the working out of the greatest achievement which has ever been conceived or performed by man. Want of enthusiasm! Oh, had the people of New York—of the United States—of the two worlds, heard the wild huzza that went ringing over the hills, chasing the deer from their coverts, sending thousands of startled sea birds out upon the ocean, as if the land no longer afforded them a place of security—had they seen the faces of these men, they would understand what enthusiasm is, and how unjust the suspicion that denied them the possession of an attribute only second to hope itself. A cheer it could hardly be called; it was one wild, prolonged shout of delirious joy, such as might welcome the disenthralment of a nation, or the union of two worlds—a union in which we all participate, you and I and every one of us, and the remembrance of which will live with us to the end. How eagerly we all waited for the word that told us the time had come when we might give vent to the feelings that had been so long restrained! And when the first lieutenant of the Niagara called upon us to give three cheers, what tongue could have remained, silent were it even the last sound it could utter?

"Now, men, three cheers," he cried; and the last word had hardly been spoken when the demand was responded to with an outburst that came from the very depth of the heart. "Hurrah! hurrah!! hurrah!!!" each louder and wilder than the last; and as the final cheer burst forth, the echoes took it up and repeated it again and again, till it seemed as if the wilderness around were peopled, and thousands of voices in every valley and on every mountain top joined in the glad shout of rejoicing. But three cheers are not enough—we must give another "for coming up"—that is for the last pull, for the landing of the cable. And still another is demanded, one which cannot be refused if it were the last cheer we should ever give. It is "One for America and England;" and it is called for by Captain Otter of the Porcupine, a gentleman whose earnest labors and whose untiring energy in his share of the work entitle him to the warmest praise. It was Captain Otter who surveyed the bay of Bull's Arm, and who guided us safely through all the intricacies of the passage the night of our entrance into Trinity Bay. To him and to Captain Dayman, of the Gorgon, who acted as our escort and pilot, from mid-ocean to the American termini, the line of the Atlantic Telegraph Company are largely indebted. It is doubtful if the British government could have selected from its long list of naval officers two who have proved themselves more capable of performing the work with which they were entrusted, or two who were more earnest in their exertions to promote the success of the great undertaking.

While the boats of the Niagara were on their way to that ship, they were cheered by the crews of the Gorgon and Porcupine, and at twelve o'clock a salute of twenty-one guns was fired from the former vessel.

As a large number of the men on board our ship had been at work all night, those who wished were allowed to "turn in," and there were very few who did not take advantage of the permission, and fewer still who did not enjoy their rest. They had worked hard and well, and took as deep an interest in the success of the work as those who had a greater stake in it.

MR. FIELD MAKES THE FIRST ANNOUNCEMENT TO THE NEW WORLD THAT THE CABLE IS LAID.

About eight o'clock on the evening of the 4th instant, while the Niagara was proceeding up Trinity Bay, and some seventeen or eighteen miles distant from the landing place, Mr. Field left the ship for the purpose of visiting the telegraph station, and if possible, of sending a despatch to the United States announcing the success of the enterprise. As the boat of the Porcupine was alongside, it was cheerfully placed at his disposal by Captain Otter, who had now undertaken to pilot the Niagara. Mr Field immediately set out, and as the Gorgon was on her way to the Bay of Bull's Arm, at the head of which the cable was to be landed, he went on board that vessel, and his boat was taken in tow. Here he was warmly received by Captain Dayman and his officers, who were in the full enjoyment of success. It was near two o'clock in the morning before he arrived at the beach, and as it was quite dark, he had considerable difficulty in finding the path that led up to the station. There was no house in sight, and the whole scene was as dreary and as desolate as a wilderness at night could be. A silence as of the grave reigned over every thing before him; while behind, at the distance of a mile, he could see the huge hull of the Niagara looming up indistinctly through the gloom of night, and the light of the lamps on her deck making the darkness still darker and blacker by the contrast. He entered the narrow road, and after a journey of what appeared to be twenty miles came in sight of the station, which stands about half a mile from the beach. There was, however, no sign of life there, and the house, in its stillness, seemed strangely in unison with every thing around. It had a deserted appearance, as if it had long since ceased to be the habitation of man. In vain he looked for a door in the front, there was no entrance there; he looked up at the windows in the hope, perhaps, of being able to enter by that way, but the windows of the lower story were beyond his reach, and the house having been partly built on piles gave it the appearance of being raised on stilts. A detour of the establishment, however, led to the discovery of a door in the side, and through this he finally succeeded in effecting an entrance. The noise he made in getting in, it was natural to expect, would arouse the inmates, but there seemed to be either no inmates to arouse, or those inmates were not easily disturbed. He stopped for a moment to listen, and as he listened he heard the breathing of sleepers in an apartment near him. The door was immediately thrown open, and in a few seconds the sleepers were awake, wide awake, and opening their eyes wider and wider as the wonderful news fell upon their astonished and delighted ears. They could hardly believe the evidence of their senses, and were bewildered at what they heard. The cable laid! when but a few short weeks before they had received the news of disaster and defeat, and they had looked only to the far distant future for the accomplishment of the great work. The cable laid, and they unconscious of it—they who had waited and watched so many weary days and weeks for the ships they had begun to believe would never come. What! and they were now in the bay—those same ships—within a mile of them! can they be dreaming? Dreaming! no—what they have heard is true, all true, and there is the living witness before them.

"What do you want?" was the exclamation of the first who was awakened, as he endeavored to rub the sleep out of his eyes.

"I want you to get up," said Mr. Field, "and help us to take the cable ashore."

"To take the cable ashore!" re-echoed the others, who were now just awaking, and who heard the words with a dim, dreamy idea of their meaning—"To take the cable ashore."

"Yes," said Mr. Field, "and we want you at once."

They were now thoroughly aroused, and directing Mr. Field to the bedrooms of the other sleepers—for there were four or five others in the house—they prepared themselves with all haste to assist in landing the cable. But the other inmates were already awake, and when Mr. Field made his appearance on the corridor which divides the sleeping apartments on each side of the house, he found them awaiting him in the lightest description of summer clothing. As they had neither pants, vests, coats, shoes nor stockings on, the curious will have no difficulty in discovering in what they were dressed. They were as amazed at seeing Mr. Field as if he were an apparition; and when they recovered themselves sufficiently to ask the meaning of such a strange visitation, they were thrown into another state of wonderment by what he related. When they learned all, they dressed, and prepared themselves for the work before them. Mr. Field found that the telegraph office would not be open till nine o'clock that morning, and that the operator of the New York, Newfoundland and London Telegraph was absent at the time. He also ascertained that the nearest station at which he could find an operator was fifteen miles distant, and that the only way of getting there was on foot. Now, fifteen miles in Newfoundland is about equal to twice the distance in a civilized country, and is a tolerably long walk; but it was something to be the bearer of such news to a whole continent, and so two of the young men willingly volunteered for the journey, bearing with them, for transmission to New York and the whole United States, the following despatch, which contained the first announcement of the successful accomplishment of the work, and the historical importance of which will justify its republication here:

UNITED STATES STEAM FRIGATE NIAGARA,
TRINITY BAY, Newfoundland, August 5, 1858.

TO THE ASSOCIATED PRESS, NEW YORK:—

The Atlantic Telegraph fleet sailed from Queenstown, Ireland, Saturday, July 17, met in mid-ocean, Wednesday, the 28th, made the splice at one P. M. Thursday, the 29th, and separated. The Agamemnon and Valorous bound to Valentia, Ireland, the Niagara and Gorgon for this place, where they arrived yesterday, and this morning the end of the cable will be landed. It is 1,696 nautical, or 1,950 statute miles from the telegraph house at the head of Valentia harbor to the telegraph house at the Bay of Bull's Arm, Trinity Bay, and for more than two-thirds of this distance the water is over two miles in depth.

The cable has been paid out from the Agamemnon at about the same speed as from the Niagara.

The electrical signals sent and received through the whole cable are perfect.

The machinery for paying out the cable worked in the most satisfactory manner, and was not stopped for a single moment from the time the splice was made till we arrived here.

Captain Hudson, Messrs. Everett and Woodhouse, the engineers, the electricians, officers of the ships, and, in fact, every man on board the telegraph fleet; have exerted themselves to the utmost to make the expedition successful, and by the blessing of Divine Providence it has succeeded.

After the end of the cable is landed and connected with the land line of telegraph, and the Niagara has discharged some cargo belonging to the Telegraph Company, she will go to St. Johns for coal and water, and then proceed at once to New York.

CYRUS W. FIELD.

HOW THE CREW OF THE NIAGARA CELEBRATED THE SUCCESS OF THE ENTERPRISE.

During the forenoon of the day on which the cable was landed, the greater part of the crew of the Niagara was permitted to go ashore and amuse themselves as well as they might in a perfect wilderness. And never did the crew of any vessel enjoy themselves with more zest under the circumstances—it was different from their shore experience in other places, but the novelty only served to increase the pleasure.

Some amused themselves in explorations over the hills and through the forests; others in piscatorial excursions up the trout streams; others in swimming; while others commemorated the occasion by erecting a mast near the point where the cable was landed, and dignified the place with the title of "Niagara City." There were no lots marked out, it is true; no boundaries, nor any thing of that kind; but there may be at some future day, and if the inhabitants do not retain the name, they don't deserve to have a city—that's all. The portion of the crew who assisted in this work numbered about a hundred altogether, and among these was a considerable body of the firemen, under the charge of Mr. Sexton, the engineers' storekeeper. The high officiating personage on the occasion—in fact the founder of the future city—was John McMath, one of the sailors, and just the man to take the lead in such a movement. McMath resolved in his own mind that something more should be done to commemorate the great event in which he and his messmates had played a part, however humble, and acting upon this determination, he gathered a large number of the crew together, and addressed them on the subject. When they were all assembled he spoke in substance as follows:

"Now, boys, we are all here, and I want to say a few words to you. We have laid the cable. (Cries of yes, yes, and hurra). Yes, boys, we have laid the cable, and that's a fact, this time—no mistake now. (A voice—That's true, any way. Give us some more of that kind of talk, Mac.) It's down, and it'll stay down where we have put it. (Another voice—they'll have a job to lift it—that's all). Now, what I want to say to you is this—(Aye, aye). I want the people who come here to know, that the Niagara's boys have been here before them, and that it was they that laid the cable. No objections to that. (No, no, from a hundred tongues). Well, then, I have got something to propose. (What is it?—what is it?) I propose that we raise a mast on this very spot, and when we have got it up, that we shall call the place all round about "Niagara City." Are you all agreed? (Aye, aye, we're with you, Mac.)

At the close of this brief, but pithy and forcible address, they all unanimously decided that McMath should be the leader, and the better to perform his part he manufactured from the branch of a tree a boatswain's whistle, with which to direct the men in putting up the mast and rigging. Under his direction they went to work at the forest, selected the tallest pine, put a rope around it, and tugged and pulled till they dragged it up by the roots. They then cut off the branches, until nothing remained but the straight trunk of the tree, which they planted firmly in a deep hole they had dug for the purpose. This part of the work performed, they tore down several other trees to make yards for the mast. There was the main-yard, the maintop-yard, the maintop-gallant, and the main-royal-yard, and above these all floated the flag, which they extemporized for the occasion, and which bore the simple inscription "Niagara." At the close of their work, they gave three cheers, and separated, but the raising of the mast, and the founding of "Niagara City," furnished the subject of conversation among the crew for many days after.

HOME ECHOES OF THE GLAD TIDINGS.

The despatch which was sent to the Associated Press of New York did not, we understand, reach that city before the 5th, on account of the distance of the nearest station from the place where the cable was landed. That same day, however, and for a whole week, we continued to receive congratulations from all parts of the United States, and the British provinces. As they serve to show the feelings which our success called forth, and as they may be taken as the expression of the enthusiasm of the whole country, they will be read with interest. The following are pretty fair specimens of those received both at Trinity Bay and St. Johns:

[From New York.]

To Mr. Field:—

Despatch received. All well at home and store. Glorious.

C. W. Field & Co.

[From New York.]

To C. W. Field:—

Accept from your friends in New York their portion of the world's congratulations.

Peter Cooper.

St. Johns, N. B. August 7, 1858.

Trinity Bay, August 7, 1858.

[From New York.]

To C. W. Field, Esq:—

Sir—Your despatch has been received. I congratulate you, myself, and for the people of this city, on the success of the great work of uniting together the Old and New World, by the electric telegraph. Science, will, and perseverance have finally triumphed.

Daniel F. Tiemann.

Trinity Bay, August 7, 1858.

[From New York.]

To Cyrus W. Field:—

We have no facts in addition to your despatch of the 5th to the press. Every incident connected with the landing of the cable, or with the enterprise in any way, will be eagerly received by the public. Throughout the country there is intense anxiety to know all in relation to it, and the press desires the line kept open in the evening, so long as there are any facts of interest to warrant. PETER COOPER.

ST. JOHNS, August 9, 1858.

[From New York.]

Your family is all at Stockbridge, and well. The joyful news arrived there Thursday, and almost overwhelmed your wife. Father rejoiced like a boy. Mother was wild with delight; brothers, sisters—all were overjoyed. Bells were rung; guns fired; children let out of school, shouted, "the cable is laid"—"the cable is laid." The village was in a tumult of joy. My dear brother, I congratulate you. God bless you! DAVID DUDLEY FIELD.

ST. JOHNS, August 9, 1858.

[From New York.]

To CYRUS W. FIELD:—

Returned from country and received your message. Congratulate you with my whole heart on the success with which Providence has blessed the undertaking. Your name on every tongue. I need not say on what terms a household word. E. M. ARCHIBALD.

ST. JOHNS, August 9, 1858.

[From Astor House, New York.]

To C. W. FIELD:—

The Common Council of New York have resolved on a great celebration of the laying of the cable. The committee of arrangements desire to know the day on which the first message will be sent, in order to recommend a general illumination in the evening. Please send reply to the day. DANIEL F. TIEMANN, Mayor.

ST. JOHNS, August 11, 1858.

[From New York.]

To C. W. FIELD:—

Parties are pressing upon us messages to pay for them, and take their turn, when the line opens. What shall we do? Please reply.

W. G. HUNT.

The following despatch was sent by Mr. Field to the President, informing him of the landing of the cable:

TRINITY BAY, August 7, 1858.

TO HIS EXCELLENCY JAMES BUCHANAN, PRESIDENT OF THE UNITED STATES, BEDFORD SPRINGS.

Your telegraph despatch duly received. We landed here in a wilderness, and, until the telegraph instruments are all ready and perfectly adjusted, no message can be recorded over the cable. You shall have the earliest intimation; but some days may elapse before all is perfected.

The first message from Europe will be from the Queen to yourself, and the first from America to Europe your reply.

With great respect, very truly, your friend, Cyrus W. Field.

To this the following reply was received:

Trinity Bay, August 7, 1858.

[From Bedford Springs.]

To Cyrus W. Field, Esq.:—

My Dear Sir—I congratulate you with all my heart on the success of the great enterprise with which your name is so honorably connected. Under the blessing of Divine Providence, I trust it may prove instrumental in promoting peace and friendship between kings and nations. I have not yet received the Queen's despatch.

Yours, very respectfully, James Buchanan.

Trinity Bay, August 5, 1858.

[From Baltimore.]

To Mr. Field:—

Have you laid and operated the cable successfully? We can't believe the good news here. H. J. Rogers.

St. Johns, August 9, 1858.

[From Baltimore.]

To C. W. Field:—

Your despatch, announcing that the Atlantic telegraph cable has been laid, was delivered to me yesterday. I thank you for it, and congratulate you heartily on your success. J. H. T. Manners Sutton.

St. Johns, August 7, 1858.

[From Boston, August 6.]

To C. W. Field:—

Dear Sir—The city authorities of Boston to-day ordered the firing of 100 guns upon the Common, and the ringing of bells for one hour from noon, in honor of the successful laying of the cable.

Respectfully yours, Alexander H. Price.

St. Johns, August 7, 1858.

[From Boston.]

To C. W. Field:—

Your despatch is received; universal joy is expressed; 100 guns fired this morning in honor of the success of the great event of the age.

Nathan. P. Banks.

St. Johns, August 10, 1858.

[From Washington.]

To C. W. Field:—

Sir—Please advise the quickest route for sending you a flag-staff of oak, grown at Mount Vernon, for your company to commemorate.

Jas. C. Ruchett.

TRINITY BAY, August 7, 1858

[From St. Johns, N. B.]

To Mr. FIELD :—

Accept the most hearty congratulations of Messrs. Jardine, Robertson, myself, and the inhabitants of this city generally. All join in congratulating you on your brilliant success. D. B. STEVENS.

ST. JOHNS, August 9, 1858.

[From Halifax.]

To CYRUS W. FIELD, Esq. :—

Greatest enthusiasm here—everybody full with joy. Salutes were fired during Saturday afternoon from the Citadel and flagship, and by the Halifax Volunteer Artillery, under Capt. Tremain. Every piece of bunting in the city displayed, and every bell ringing. In the evening all the public buildings and principal business establishments and private residences illuminated. Many magnificently and gayly decorated Telegraph offices shone forth with names of all prominent men celebrated in telegraph history, in which that of Mr. Field occupied the most conspicuous place. Immense torchlight procession, headed by the Mayor, Halifax Volunteer Artillery, and Engineer Company, paraded the streets until a late hour, discoursing sweet music to the amusement of citizens who, in vast numbers, promenaded the streets, cheering enthusiastically when passing the telegraph office. Many persons came in by railroad from the surrounding country to witness the demonstration. Double royal salute of forty-two guns each will be fired from Citadel, flagship, and by the Halifax Artillery, as Queen Victoria's message to President Buchanan is passing through Nova Scotia.

JESSE HOYT.

ST. JOHNS, August 6, 1858.

[From Toronto.]

To C. W. FIELD :—

His Excellency the Governor General desires to express his congratulations on the success of the accomplishing of the great undertaking of laying the Atlantic telegraph cable.

R. J. PENNEFEATHER, Governor's Secretary.

TRINITY BAY, August 7, 1858.

[From Montreal.]

To C. W. FIELD :—

I congratulate you most heartily—a flood of joy bursting forth from all parts of Canada at your indefatigable perseverance and final success.

O. S. WOOD.

A VISIT TO THE TELEGRAPH STATION.

The road which leads from the beach up to the telegraph station has already been described, and the reader is therefore aware that it is not the most inviting for those who are fond of rapid travelling. But it is a short road, and the passage over it is neither dangerous nor difficult, although the bog holes are but partially filled up, and the person who would undertake to walk over it with clean shoes would be somewhat disappointed at the end of his journey. At one end of this road, within a few feet of the beach, stood the telegraph station, before it was removed on the day the cable was landed. There was neither house nor log cabin there, and were the spectator not informed that the station had occupied a particular spot, he would have some difficulty in finding the precise place where it was located. The station was simply two upright poles planted in the earth, and rising to a height of about three and a half feet, and having a board three feet long and five inches wide nailed on top. Upon this a small instrument for transmitting messages was placed, and on this instrument Mr. McKay, the Superintendent of the lines of Newfoundland, operated. He took it down soon after the cable was landed, put the instrument in his pocket, and literally speaking, walked away with the station. It would, however, have been a somewhat difficult matter to dispose of the Atlantic telegraph station in the same manner, and the man who should undertake the task would have had a herculean labor to perform. The reader has been made acquainted with the fact that it is built on the side of a hill; that it has but one door, and that opens on the side; that it is two stories high, with a parlor, a kitchen, and several bedrooms; that it is constructed mainly of wood; that it is five miles from the nearest house and fifteen miles from the nearest village; that an attempt has been made to clear away the wood which hems it in on almost every side, and finally, that it is in the midst of a perfect wilderness; but as yet he knows nothing of the wonderful domestic life that exists inside of that same house, and of the strange doings that take place therein, especially in the culinary departments. I may begin by stating that there are eleven occupants, and when I say that these occupants are all of the masculine gender, the reason why things are not as they ought to be in that house will at once become apparent. No man ought to be surprised, for instance, if the bread is not well baked, the meat not sufficiently cooked, the tea too weak or too strong, the potatoes—whenever they get them—boiled to smash, or not boiled at all, or if the fire requires to be kindled at least half a dozen times a day. Nor should they be astonished if the beds are not made till the occupant is just ready to get into them; and if, according to the same system, the table utensils are not cleaned till every thing is cooked and ready to go on the table. All this is explained by the fact that there are no women to attend to these things, and if the Telegraph Company should permit the operators to live as they now are, their relapse into a state of semi-barbarism, so far as the domestic usages of civilized life are regarded, is only a question of time. Imagine eleven or twelve young men thrown for the first time on their own resources, endeavoring to cook for themselves, to wash the dishes, to sweep the floor, to make the beds, to light the fires, and to perform the hundred and one little things of which men know nothing, but which, with those other "trifles," make up that greatest of all blessings—a comfortable and a happy home. Imagine, in fact, a man attempting to perform the part of woman in his clumsy, ungainly way, and you have some idea of what a house full of men can effect in this line, and of the condition of the domestic portion of the Atlantic telegraph station in particular. What a scene of confusion in the kitchen, what a terrible state of things in the half furnished parlor, without a sofa, and with a few boxes and trunks for seats! what a frightful chaos in the dozen little bedrooms up stairs, where the blankets and sheets and pillows are rolled up in one mountainous lump, or so twisted about as to furnish a good half hour's work to the occupant to get each into its proper place again! But with all this confusion, the electricians and operators are as fine a set of fellows as ever lived in one house, and live more cheerfully and happily in the midst of discomforts than many in the Fifth Avenue, who can boast of all the luxuries and appliances of civilized life. It would be unjust to bring them to account if their domestic education has been neglected; and if, among other things, they did not learn to bake bread and to cook a beef-steak properly, it is not their fault, although, in this instance, it is their misfortune. What matter if they do not know how long it takes to boil an egg, if they can translate the language of electricity, and send a message along the cable that now lies extended on the bed of the ocean between two continents? And if the company have not every thing provided for them, they can "wait a little longer" for the "good time coming"—a time that is to bring with it a piano and billiard table to while away their leisure hours—a time when the parlor shall no longer want a sofa, but when it shall shine forth in all the refulgence of a pier glass, one mahogany table, perhaps two—the company can afford to be liberal now that the cable is laid—a dozen handsome mahogany chairs, some ornaments for the mantelpiece, a stool for that piano; a substantial Brussels carpet with a handsome pattern, a hearth rug, new style, with a landscape, a lamblike lion, or ferocious tiger, in the centre; an accurate timepiece, in a neatly carved frame; and all the other articles that make up a well-furnished parlor. It may be asked what will they want with all these in the midst of a wilderness? The answer is very simple—they want them to keep them in mind of what civilized life is like, and of the homes which they have left behind in the Old World. With a parlor furnished in the manner described, they will require few other things, except some paintings to decorate the walls, and these the talented artist who belongs to the corps of operators will supply with his brush and palette.

Then, after the company have attended to the parlor, or rather before they have attended to it, they must look out for the kitchen arrangements, the culinary utensils, and all that. They must provide a pan or pans, so that the volunteer cooks may not be obliged to use the pot for the double purposes of boiling and frying; they must furnish more than one kettle, so that if the spout or handle should happen to be knocked off they may not be reduced to extremities. It will, however, assuredly be gratifying to the benevolent housekeepers of New York, and indeed of all Christendom, to know that the domestic difficulties which these same electricians and operators have encountered will soon be brought to an end, as a cook was on his way from St. Johns to take charge of the culinary department when we were about leaving that city. It is true the four occupants of the station who resided there before the arrival of the Niagara, did not take as much interest in the preparation of the house for the reception of the expected ones as they might have done, but, in extenuation of their neglect, it must be stated that they had given up all hope of ever seeing such a wonderful thing taking place, and as for the expected ones, they had long ceased to be expected. If, however, whether excusable or inexcusable, they did not attend to the few matters to which they could attend, there is no excuse for the company, should they neglect to furnish them with every thing necessary in the department now under our consideration, and to which we intend to direct their attention with all the particularity of which our knowledge of such matters will admit. In the first place, then, they must put a grate in the kitchen—that every cook considers almost indispensable. The next thing is an oven, and when this is put up, they will want toasting and roasting apparatus, chairs instead of hard boxes and harder blocks to sit upon—blocks which are particularly objectionable to men of tender and delicate feeling. It is needless to repeat the various things that the kitchen of the telegraph station will require to make it complete, but the directors of the company have only to get an inventory of what their own kitchens contain, to be aware of the wants of the operators and to be enabled to supply them. The cook, there is no doubt, will prove a perfect treasure to them, and that same cook will hear of efforts in cooking before he is long in the station that will astound him. Just think, oh! ye housekeepers of New York, who have been so often appealed to already, just think of Christian men putting a large lump of pork into a pot not big enough to hold one half the quantity, and that pot about one-third full of water! Is it any wonder that the water should all boil away, and that the bottom of the pot, becoming red hot, should set the pork in a blaze? Is it any wonder that this should occur, and that the cooks should throw a whole pailful of water, fill the pot to overflowing, and put out the fire altogether? What would you think of men who set out with the intention of making what they called a plum dumpling, and who were obliged, by their own incapacity and utter ignorance of the great art of cooking—an art that has immortalized a Soyer and a Murray—to leave the dumpling unfinished, and then endeavor to convert it into a series of pancakes? Just think of it, pancakes with plums in them, and those plums so battered and bruised that the stones would persist in appearing where they were not wanted, right on the top of the flattened surface. But the cook will set every thing to rights, and take care, when the pork is boiling, the fat does not get into the fire. He will also see to it, that when dumplings are commenced they do not end by becoming doubtful pancakes.

Now these little domestic mishaps and troubles are, after all, not such troubles as might be supposed, but furnish material for many a good joke to the dwellers at the station. They have plenty to eat, for the company are determined that, though there should happen to be a famine in Newfoundland, they shall not want. They have also a capital barrel of ale, and there is the best water in the island within a few feet of the building. There is no lack of fuel, for firewood is abundant all around them, and they can cut down sufficient in a day to last them for a month. In addition to all this, there is plenty of game in the valleys and on the mountains, while the sea, near the coast, swarms with fish, and the streams are alive with trout. Newfoundland is in fact the sportsman's paradise, and when the Nimrods of the United States come to find it out, they will rush there in crowds during the summer months. What do they think of catching forty trout in the course of an hour and a half, and of taking them all from the one spot, in a stream not more than two yards wide in its widest part? What do they think of performing this feat with a rod made of the crooked branch of a tree, without a reel, and the hook baited with a piece of mutton? This feat the writer himself performed, and he willingly testifies that the trout was the finest he ever tasted—vastly superior to the wretched affairs called brook trout, which many of the Broadway restaurants serve up at a dollar apiece. There are bears, too, in the island, affording fine sport for those who are fond of the rougher kind of game, and the wolves sometimes become so bold that they break into the farm-yards and kill the cattle. The deer, or the kariboo as it is called, affords very good venison, and there are several varieties of feathered game. All things considered, it will be seen from this that Newfoundland is not such a dreary, desolate place to live in, and that if the telegraph station is situated in the midst of a wilderness, it is one that is not devoid of attractions.

There is one particular part of the building which has not yet been alluded to, but which is, after all, the most important. This is the electricians' office, in which all the telegraphic instruments have been put up. There are the batteries, which bear the same relation to the wire conductor that the boilers bear to the steam engine; and there the delicate apparatus by means of which the weight or force of the electrical current is told to a nicety; there, too, the needle, which tells whether the continuity or insulation is perfect. There, in a word, are all the instruments which were put on board the Niagara, and which, having served their purpose well, have been transferred to the telegraph station at Trinity Bay. The office is also furnished with a clock which keeps Greenwich time, and in the event of its running down there are half a dozen chronometers by which to set it right again. Take it altogether, the electricians' office is the best arranged part of the whole establishment, and presents a strong contrast to the kitchen and parlor, both of which the company must have well furnished.

The telegraph house has been called "Cyrus Station" by the electricians, in honor of Mr. Cyrus W. Field, and will hereafter be known by that title. It could not receive a more appropriate one, and will help to perpetuate the name of a man who has done more than any other to make the Atlantic telegraph a grand reality.

DEPARTURE FROM TRINITY BAY AND ARRIVAL AT ST. JOHNS.

The Niagara, the Gorgon, and the Porcupine left Trinity Bay early on the morning of the 9th instant for St. Johns, where she arrived about six o'clock the evening of the same day. From what we had heard, it was evident that the whole population were moved by the greatest enthusiasm, and that they intended to make our visit the occasion of a grand demonstration. Indeed, sufficient evidence of this was to be found in the fact that the Speaker of the Colonial Legislature, Mr. Shea, had been deputed to wait upon Captain Hudson at Trinity Bay for the purpose of ascertaining what time they should set out, so that preparations might be made for the intended demonstration the day of their arrival. They proposed, he said, illuminating the city, getting up a regatta, and giving a ball in honor of the occasion. It was evident that the good people of St. Johns were determined to give us a hearty reception, and that when we left Newfoundland we should carry away a pleasant remembrance of their hospitality. The little steamer called the Blue Jacket, which brought Mr. Shea on his mission to Trinity

Bay, had about a dozen other gentlemen from St. Johns, whose impatience to see the Niagara before her arrival in that port could not be restrained. It was impossible for the captain to refuse the pressing invitations he received, and they were accordingly accepted; but he determined on remaining no longer than was necessary to take in a sufficient supply of coal for the homeward passage. We were all impatient to get to New York to see our friends again, and to tell them ourselves how the cable was laid, and all the incidents of the eventful week through which we passed. Every day that delayed our departure, therefore, seemed as long as two, and we thought, in our eager haste, that the fog which hemmed us in would never lift. At last, the weather having partially cleared up, we started, after a detention of four days in Trinity Bay, and made all the speed we could for St. Johns. The little Blue Jacket met us about a mile from the entrance of the harbor, with flags flying, and a large company of the residents of the city on board, and some four or five miles away to the south we could see Cape Spear light-house decorated with and almost concealed under a cloud of streamers. When at last we came within sight of St. Johns, and passed between the two lofty hills that form the outposts of the harbor, and which rise to the height of six or seven hundred feet, all the church bells in the city rang out their most joyful peals, the cannon thundered from their brazen throats a boisterous welcome, while cheer on cheer arose from the crowded wharves, the hillsides, and the shipping. Yet in the midst of all this our yearnings for home grew stronger and stronger, for while we fully appreciated their friendship and hospitality, we could not help thinking of those who were anxiously awaiting our return, and of the great city which we had left five months before. Our ship had hardly been anchored before she was boarded by several of the officials and citizens of the town. The cannon kept up their noisy demonstrations long after the crowds became tired of cheering, and at intervals could still be heard "the chiming of the bells." It was a grand festival in the city, the people abandoned their labor and kept holiday, and hundreds came pouring in from the country in their Sunday clothes. Never had St. Johns seen such a sight before, and the visit of the Niagara will be remembered hereafter as one of the greatest days in its annals. At night the public and other buildings were illuminated, and a very striking particolored transparency was displayed from the highest point of the market house. The office of the New York and Newfoundland Telegraph Company was also illuminated, and it may be added the operators were kept busy all night sending off despatches to New York. Over one of the buildings was the following inscription:

THE CABLE OF FRIENDSHIP,

MAY A WIRE NEVER BE BROKEN.

A wish to which every one, whether he is or is not a cable-layer, will heartily respond.

The rejoicing was kept up far into the night, and early morning caught some of the merry-makers still engaged in their festivities. The big guns got through with their part of the demonstration by dusk; but muskets, rifles, and other small arms kept at it till late in the evening. It was evident the quiet people of St. Johns had resolved to make a day of it, and they succeeded in making a night of it, too. One heard of nothing in the streets but the Niagara and the cable, and indoors it was all the same. The little city seemed to be actually beside itself with joy, and as if it had not done full justice, went at it the next day with as much zest as if it were but the beginning.

The following day Mr. Field was presented with an address at the Merchants' Exchange by the Chamber of Commerce. A deputation from that body was present, headed by their President, Walter Greive, Esq., who spoke as follows:

Sir—The Chamber of Commerce of St. Johns have the high gratification of welcoming you on your return to these shores, after the accomplishment of the grand undertaking in which you have been engaged for some years past. Personally known as you are, sir, to the members of the Chamber of Commerce, they have watched with deep interest your indefatigable perseverance in carrying out the vast scheme of the transatlantic telegraph; and whilst they sympathized with you in the disappointment you must have experienced at the failure of 1857, they felt assurred that your well-known energy, combined with the scientific skill of those gentlemen who were associated with you, would eventually succeed, if success were practicable. Devoting, sir, as you have done, your fortune, time and talents to this great enterprise, the Chamber of Commerce rejoice that you have seen the fulfilment of your most ardent wish; and they beg to express their fervent hopes that you may be spared many years to enjoy the fruit of your intense labor, and that you may receive on your return to your native land, such a welcome from your countrymen and friends as may in some measure compensate you for the days and nights of anxious care you have passed.

Mr. Field replied as follows, to the foregoing address:

Gentlemen—The address you have presented is deeply grateful to my feelings on this occasion. I will not affect to conceal from you that the successful result of laying the Atlantic telegraph cable fills me with great joy, while, I trust, I feel humbly thankful to the Giver of all Good for having permitted me to be an instrument in aiding the accomplishment of a work that is destined to promote the happiness and welfare of the human family. I have certainly made some sacrifices, and have had to contend with difficulties of no small magnitude. But when I find my friends coming forward, as you have done, to congratulate me in the hour of success, I am more than repaid for any toils I may have borne in the furtherance of this great work. But it would not only be ungenerous, but unjust, that I should for a moment forget the services of those who were my co-workers in this enterprise, and without whom any labors of mine would have been unavailing. It would be difficult to enumerate the many gentlemen whose scientific acquirements, and skill and energy have been devoted to the advancement of this work, and who have so mainly produced the issue which has called forth this expression of your good wishes on my behalf. But I could not do justice to my own feelings did I fail to acknowledge how much is owing to Captain Hudson and the officers of the Niagara, whose hearts were in the work, and whose toil was unceasing. To Captain Dayman of her Majesty's ship Gorgon, for the soundings so accurately made by him last year, and for the perfect manner in which he led the Niagara over the great circle arc while laying the cable; to Captain Otter, of the Porcupine, for the careful survey made by him in Trinity Bay, and for the admirable manner in which he piloted the Niagara at night to her anchorage; to Mr. Everett, who has for months devoted his whole time to designing and perfecting the beautiful machinery that had so successfully paid out the cable from the ships—machinery so perfect in every respect, that it was not for one moment stopped on board the Niagara until she reached her destination in Trinity Bay; to Mr. Woodhouse, who superintended the coiling of the cable, and zealously and ably co-operated with his brother engineer during the progress of paying out; to the electricians for their constant watchfulness; to the men for their almost ceaseless labor; and I feel confident that you will have a good report from the commanders, engineers, electricians and others on board the Agamemnon and Valorous—the Irish portion of the fleet—to the Directors of the Atlantic Telegraph Company, for the time they devoted to the undertaking without receiving any compensation for their services. And it must be a pleasure to many of you to know that the director, who has devoted more time than any other, was for many years a resident of this place, and well known to all of you, I allude to Mr. Brooking, of London; to Mr. C. M. L. Lampson, a native of New England, but who has for the last twenty-seven years resided in London, who appreciated the great importance of this enterprise to both countries, and gave it most valuable aid, bringing his sound judgment and great business talent to the service of the company; to that distinguished American, Mr. George Peabody, and his most worthy partner, Mr. Morgan, who not only assisted it most liberally with their means, but to whom I could always go with confidence for advice. I shall rejoice to find that the commercial interest of this colony which you represent, may be largely benefited by the close bonds that will now be drawn by the agency of the Atlantic telegraph between them, and the varied relations they hold throughout the world, and wishing you all every prosperity and happiness.

Later in the day Mr. Field was presented with another address by the President of the Executive Council of Newfoundland, in the Council Chamber, a large number of the members being present. Mr. Lawrence O'Brien, by whom the address was delivered, spoke as follows on behalf of the Executive Council:

We, the Executive Council of Newfoundland, have great and sincere pleasure in offering you our congratulations upon the success of the great project of the laying of the Atlantic telegraph cable. Intimately acquainted as we have been with the energy and enterprise which have distinguished you from the commencement of the great work of telegraph connection between the Old and the New Worlds, and feeling that under Providence this triumph of science is mainly due to your well-directed and indomitable exertions, we desire to express to you our high appreciation of your success to the cause of the world's progress, and our hearty sympathy in these feelings, inseparable from its present proved result. We recognize in this achievement the creation of new bonds of commercial and social union between the people of the two great nations thus marvellously connected; and we are gratified to remember the aid contributed towards this most important object by the Colony of Newfoundland, in the privileges conferred upon the company you represent. We sincerely trust the best expectations of the results of the enterprise to all interests connected with it may be immediately fulfilled, and that you, sir, individually, may reap from it an ample recompense for your many losses and sacrifices, from its inception to the present hour.

On behalf of the Executive Council of Newfoundland,

LAWRENCE O'BRIEN, *President.*

ST. JOHNS, August 9, 1858.

SIR—At the request of the Executive Council I enclose the copy of the address purposed to be presented to you by that body, and to request that you will be kind enough to intimate to me at what time it will suit your convenience to receive the Council for the purpose of its presentment.

Mr. Field replied as follows:

MR. PRESIDENT AND HONORABLE GENTLEMEN—I thank you with all my heart for this cordial manifestation of your good will. There is, however, nothing new to me in the present tone of your feelings. Upwards of four years ago, when I first laid before the Legislature of this colony the plan of uniting the two continents by means of telegraphic communication, I received your ready countenance, and in the charter of incorporation then passed, was unfolded the whole view, which has now arrived at its final accomplishment. The terms of that charter were liberal and encouraging. But had your councils been guided by a different spirit, the project would have been abandoned, and years perhaps might have passed without witnessing this happy union of the two worlds, with the beneficial consequences it is destined to diffuse. The exclusive privileges conferred by the colony on the New York, Newfoundland, and London Telegraph Company, have been the subject of hostile criticism, and it is therefore with satisfaction I observe the approving terms in which you refer to them. Every enlightened country recognizes a right of property in those who originate a work, where science or skill or capital has been invested. This protection is necessary to draw out the efforts of men in new works of public utility; for who would sow, if he couldn't reap? And while the individual has his reward, society is the gainer by his labors. In the exclusive privileges you have conferred on the company I represent, the principle of copyright only is involved, and I think there can now be no doubt that your policy has conserved the interests of the colony; while I confidently trust the future may be productive of much benefit to your people from the great work, which from the beginning to the present time has had your consistent and liberal support. I shall look with peculiar pleasure on the advantages you may derive from the proud position of this colony in the telegraphic connection with the Old and New Worlds, and shall be ever ready to promote your views of advancement by all means in my power.

An official visit was paid to Capt. Hudson, on board of his ship, by the Executive Council of Newfoundland, and a committee from the Chamber of Commerce, to congratulate him on the success of the undertaking in which he has played a part. Mr. Lawrence O'Brien addressed him on behalf of the Executive Council of Newfoundland, and Mr. Walter Greive on behalf of the Chamber of Commerce, to both of which the Captain made brief and appropriate replies.

At seven o'clock on the evening of Tuesday, the 12th instant, Governor Bannerman and his lady entertained a large company at dinner in the Government House. There were some sixty or seventy persons present, among whom were Captain Hudson, Mr. Field, Purser Eldridge, Drs. Green and Gunnell, Lieut. Boyd, Lieut. Gherardi and the author, from the Niagara; Commander Dayman, of her Majesty's steamer Gorgon; Captain Otter, of her Majesty's steamer Porcupine; Commander Paisley, of her Majesty's steamer Atlanta; Hon. Mr. Shea, Speaker of the Colonial Legislature; Mr. O'Brien, Chief Justice Brady, Mr. Kent, Colonial Secretary; Judges Little and Robinson, several officers of the garrison and prominent public officials. At the close of the dinner Lady Bannerman retired, after which the company indulged in speech-making for about an hour, when they adjourned to the ball. The first toast given by the Governor was "The Queen of Great Britain and the President of the United States," which was drank with three times three. Then followed toasts complimentary to Mr. Field, Captain Hudson, Captain Otter, Captain Dayman and others, to which brief speeches were made in reply. When the Governor and his guests entered the Colonial building, in which the Provincial Legislature holds its sessions, and in which the ball was given, they were received with marked distinction by the large company present. The ball-room was handsomely decorated with American and English flags, and a portrait of Washington, in a wreath of evergreens, was suspended in the most conspicuous place. The ball, which was a most successful affair, was kept up till daybreak. It sustained the reputation of St. Johns for both the grace and beauty of the fairer part of the population, and it need not be wondered at if, some future day, we should hear of a union taking place between some of the sovereign citizens of the free republic and some of the fair daughters of Newfoundland—a union of a still stronger and more indissoluble character than even that established between the Old World and the New by the electric bond which now binds them.

The day after the ball there was a regatta on Lake Quidy Vidi, but as Captain Hudson had determined on starting for New York that afternoon, we were unable to wait for the termination.

HOMEWARD BOUND.

At length the hour of our departure arrived—we were at last homeward bound. We could hardly realize the fact that we were not again going to England, instead of New York, and that the cable was successfully deposited at the bottom of the ocean. For home, crowned with success! How slowly the ship appears to move, and the fog, that sets in thicker and thicker around us, seems as if it never would lift. But we have no reason to be dissatisfied, and though the hours were never more dull and monotonous, yet every delay only enhances the pleasure of meeting our friends again. How we measured the distance each day on the chart, and wished that it were only what it appeared on paper. How we tried to prove that we had overrun our reckoning, and were nearer to our destination than we really were. How we calculated on the wind, that would not come from any other point than that from which it was not wanted; and how eagerly we looked for any change in the sky that promised a favorable breeze. It is all useless, however, for here we are in our fourth day from St. Johns and three hundred and eighty-five miles from New York; but the fog would not clear, and the wind would not come, and without observation for two days, what could we do? Yes, here we are, over three hundred miles from New York, and it will hardly be credited, with a pilot on board—a New York pilot, Mr. William Maxwell, whom we have just taken from the Mary Taylor—the first pilot boat built by George Steers, as our ship was one of the last he ever constructed. Here was a piece of enterprise deserving of encouragement. Even at a distance we thought she was a New York boat, and we were not deceived when she came alonside. The pilot was soon aboard, and as the graceful little vessel which he had just left sailed by, one of her crew asked if we had been successful.

"Capt. Hudson," said he, "is the cable laid?"

"Yes," replied the captain, "the cable is laid."

It was the first he had heard of the fact, for the boat was twelve days out of New York; but it evidently took him by surprise. Pulling his cap off his head, he gave what was doubtless intended for a cheer, but which was nothing more or less than a perfect yell of delight. That satisfied him and it satisfied us, for it was worth a dozen hurras, both to hear and see the spirit with which it was done. An hour after the Mary Taylor was away beyond the horizon, and the base of a rainbow rested on the point where we had watched her till she disappeared.

On the 15th we sighted one of the European propellers bound to New York, but the fog soon after closed in and we saw no more of her. As Captain Hudson desired to speak her two guns were fired, to which she responded with two more, but she must have kept on her way, as we could not see her when the fog partially lifted. On the 17th we spoke the pilot boat Edwin Forrest, and asked if the Queen's message had arrived, to which we received a reply in the affirmative. This was enough—the cable was not only laid, but was in the best working order, and nothing more was necessary to complete our success. The pilot boat, as she passed astern, saluted us by firing a gun and dipping her flags, to which we responded by dipping ours. At five o'clock in the morning the tugboat is alongside. Home at last!

ARRIVAL OF THE NIAGARA AT NEW YORK.

It was about five o'clock in the morning of the 18th of August that the Niagara arrived off Sandy Hook, after one of the most eventful cruises on which ship had ever sailed. Already had the news of her arrival reached New York, and the waking city heard with a glad heart that the long expected ship had returned crowned with triumph. On her passage up the bay she was greeted with the thunders of cannon and the cheering of vast multitudes that had assembled on the wharves to welcome her home. The little tugboat, which had left her side early that morning with a few impatient passengers who would not await the return of the tide, reached the city hours before the historic ship herself. These passengers were Mr. Field, Mr. Everett, Mr. Woodhouse, Lieutenant the Baron de Boyé, of the Russian Navy, Mr. J. C. Eldridge, purser of the Niagara, Captain Matthew D. Field, who joined the vessel in Trinity Bay and the author. When leaving the Niagara, on board of which they had spent the most eventful period of their lives, the little company gave the captain, officers and crew, three hearty cheers. The rigging was immediately manned, and as the towboat started on her way to the city three thundering cheers greeted the passengers in return.

It was four o'clock in the afternoon when the Niagara steamed up the bay, and soon after anchored in the East River, opposite the Navy Yard. While lying here her captain, officers and crew, were visited by the public officials, and from morning to night her decks were so crowded as to render them almost impassable. The public enthusiasm was unbounded, and few thought of, or talked of, any thing else but the success of the great enterprise. The night before the arrival of the ship the city was illuminated, and although the news of the successful landing of the cable was now two weeks old, the public mind seemed as excited as ever at the wondrous achievement. The newspapers were filled with reports of the celebration of the event all over the country, and preparations were going on for the 1st of September, which had been appointed as the great day of jubilee and rejoicing. The 5th of August was justly regarded as the inauguration of a new era, an era bright with hopeful prospects for the whole human race. The thrilling announcement had been made to the world that time and space were no more, and that the great ocean itself no longer presented a barrier to the communion of the Old World with the New. All the various nations of the earth were brought together again as members of the one family, and the great idea of the unity of the race was re-established. Was it any wonder that the mind of the people of the freest land under the sun should be moved to its profoundest depth when the great principles which they promulgated were thus brought nearer to their practical realization? Not only the barriers of space and time were removed, but the entrance to the great domain of the Infinite seemed open to man, and the light that broke in from the other world tinged with its golden radiance the glorious promises of that good time which is yet to come, when wars shall cease, and peace and happiness shall reign over all the earth.

Already the rulers of the two countries which are thus united have exchanged congratulations, and their messages speak the language of friendship and goodwill—language that deserves to be recorded in letters of light for future generations.

THE QUEENS MESSAGE.

To the President of the United States, Washington.

The Queen desires to congratulate the President upon the successful completion of this great international work, in which the Queen has taken the deepest interest.

The Queen is convinced that the President wil join with her in fervently hoping that the electric cable which now connects Great Britain with the United States will prove an additional link between the nations, whose friendship is founded upon their common interest and reciprocal esteem.

The Queen has much pleasure in thus communicating with the President, and renewing to him her wishes for the prosperity of the United States.

THE PRESIDENT'S MESSAGE.

WASHINGTON CITY, August 16, 1858.

TO HER MAJESTY VICTORIA, THE QUEEN OF GREAT BRITAIN.

The President cordially reciprocates the congratulations of her Majesty the Queen, on the success of the great international enterprise accomplished by the science, skill, and indomitable energy of the two countries.

It is a triumph more glorious, because far more useful to mankind, than was ever won by conqueror on the field of battle.

May the Atlantic Telegraph, under the blessing of Heaven, prove to be a bond of perpetual peace and friendship between the kindred nations, and an instrument destined by Divine Providence to diffuse religion, civilization, liberty and law throughout the world.

In this view, will not all nations of Christendom spontaneously unite in the declaration that it shall be for ever neutral, and that its communications shall be held sacred in passing to their places of destination, even in the midst of hostilities?

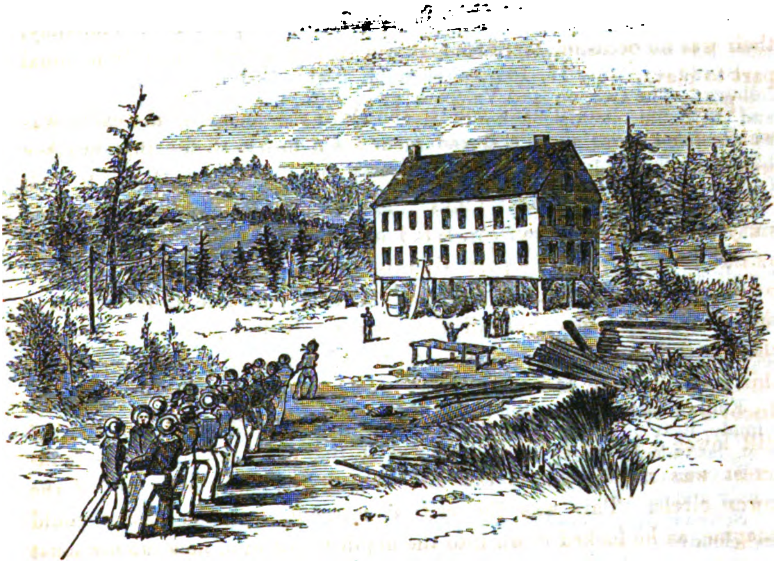
JAMES BUCHANAN.

THE NIAGARA AS SHE APPEARED AFTER THE CRUISE.

The Niagara, as we have stated, was crowded with people after her arrival, and the greatest interest was exhibited in the cable circles and the paying-out machinery, none of which had been removed. Those who visited the ship had, therefore, a pretty fair opportunity of seeing all that was worth seeing, so far as the work of laying the cable is considered. The cones, the sheaves, the bobbins, the dynamometer, the rings or fair-leaders were all intact; and besides all these, two of the circles contained some eighty or ninety miles of cable coiled and ready for laying, all of which, however, was subsequently bought by a jeweler in New York, to be made up into ornaments. The flooring of two or three of the circles had been removed, but the remainder were as perfect as at any time while the work of submerging the cable in the depths of the ocean was in progress. There were three circles on the spar deck, two, which were forward of the engine hatch, had no cable, but the third, which was aft of the same part of the ship, had twenty or thirty miles in one coil. Above each of these a temporary staging was erected for the purpose of facilitating the paying-out process. While the work was going on no one was allowed on any part of this staging who had no business there—not even the officers of the ship. This rule was carried out to the fullest extent, and with the most despotic rigor. It was along this staging that the splicer, Paine, walked with the "bight" in his hand when the last fathom in the hold coil was paid out, and when the wardroom coil was reached. The covering of the engine-hatchway bore the marks of the curiosity of one of the men, who, in his exertions to get a glimpse of Paine while performing this feat, smashed the glass and nearly lost his life by his temerity. The iron bobbins over which the cable passed on its way to the machine, were not touched, and although an effort was made to remove the tar, it was found impossible to do so wholly, and traces of it could still be seen by the visitors. For six whole days and nights those same bobbins never stopped revolving, and they always saluted the ear with the self-same rattling sound—a sound, by the way, that was peculiarly pleasant, conveying as it did the information that the cable was going out successfully. Passing further aft, the visitor came to the great machine itself, and it is as perfect a piece of mechanism of its kind as was ever constructed. While it was in operation none but those on duty were allowed to go near enough to brush their skirts against it—they could hardly get sufficiently close to touch it with a six-foot pole, so strict were the regulations. No one dare transcend the written law which was displayed close by, informing all who had no business there that there they must not go. It was certainly a well guarded spot, and the sentry who kept watch near it was as rigid as an icicle—which means that he would sooner break than bend. Then, as if all this was not sufficient, the whole was inclosed with a rope that extended beyond the dynamometer, bringing that within the prescribed limits. All these regulations and rules, however, ended with the landing of the cable, and the machinery was as free to inspection as any part of the ship. The rope was removed, and the sentry no longer kept watch over the prohibited ground. The paying-out machine had done its duty, and done it well, and was, perhaps, as deserving of attention as any thing else on board the ship. It was perfect in every particular, so that those who were of a mechanical or scientific turn of mind could study it in all its details. There were the two sheaves, with the four grooves, in which the cable ran, and there the brake-wheels on the same shaft, so that the speed of the former could always be regulated by the latter. The end of the machine showed the levers which acted upon the brakes, and which by means of oblong weights of a hundred pounds each were made to increase the strain upon the cable. But all this has been so frequently explained already that the reader must be familiar with its action. The dynamometer, which stood within a few feet of the machine, of which it is an important part, was so simple in its construction and operation, that the visitor had no difficulty in understanding the principle on which it worked. Further aft was another wheel, which the cable passed over before it entered the sheave at the stern on its way into the ocean. The staging erected on this part of the ship was for the men who were stationed here, and whose duty it was to stopper the cable in the event of its breaking on or before it entered the machine. The moment the word was passed to these men that a fracture had occurred, they were at once to put on the rope stoppers, which were always at hand, and by which it was hoped to hold the cable until the fractured part could be spliced. Fortunately, their was no occasion for their services, and they had a merely nominal part to play.

From the forward deck coil to the stern the course of the cable was watched by more than a dozen men, while nearly thrice that number were stationed in the circle from which it was being paid out, to look out for and guard against kinks. The wardroom coil, containing some sixty miles of cable, was concealed beneath a covering of canvas, but as this covering could be partially raised, the manner in which the cable was coiled could be seen at a glance. On the port side of this coil was the electricians' office, but all the instruments had been removed, and the limits alone were traceable. As the visitor proceeded forward from this point he came to another circle, and looking through the hatchway, discovered two more on the orlop deck immediately beneath, and another still lower down in the hold. It was at this point that the greatest interest was manifested, as the last turn of the cable came out of the lower circle. This was the critical moment, and the visitor could imagine, as he looked down into the depth below him, how intense must have been the interest with which we awaited the moment when the bight came to be handed up through each of the circles until it reached the spar-deck above.

With all these arrangements on board of her the Niagara looked as much unlike a man of war as it was possible for her to look. There was nothing in fact belligerent in her appearance, except the four cannons which were intended as signal guns, and the twelve immense ports on her spar-deck. Those, therefore, who expected to see a man-of-war, were doubtless disappointed; but she has done more, during the great mission on which she was employed, to bring about the reign of peace, by drawing together in closer communion the several nations of the earth, than any mere man-of-war could have done. She has helped to lay the cable, and in what grander or nobler work could any vessel be engaged? This it is which has rendered her famous, and given her an interest in the eyes of the people of the United States, greater than if she had gained the most brilliant victory on record. She did not, perhaps, look as presentable to the eye of the naval critic as if each side of her deck were lined with guns; and the tar spots which frequently met the eye, may have seemed unsightly to what are called refined tastes, but they are preferable to blood stains; and it is to be hoped there may be more frequent employment for the cable machinery than for the cannon.



A. T. CO.'S STATION HOUSE.

OFFICIAL REPORTS.

MR. CYRUS W. FIELD'S DIARY.

NEW YORK, *August* 18, 1858.

TO THE DIRECTORS OF THE ATLANTIC TELEGRAPH COMPANY, London:

GENTLEMEN—For your information I herewith submit a copy of my diary since leaving Queenstown, Ireland.

SATURDAY, July 17, 1858.—Telegraph fleet sailed from Queenstown as follows:—The Gorgon and Valorous at 11 A. M., the Niagara at 7 30 P. M., and the Agamemnon a few hours later. All the steamers to use as little coal as possible in getting to the rendezvous. Up to 5 P. M. clear weather and blue sky; from 5 to 9 P. M. overcast, threatening weather and drizzling rain; from 9 to 12 P. M. overcast, hazy and squally.

SUNDAY, July 18.—The Niagara passed Cape Clear in the morning. Wind varying from W. by N. to N. N. W.; hazy atmosphere, cloudy and squally.

MONDAY, July 19.—Wind varying from W. to N. W.; hazy atmosphere, cloudy and rainy.

TUESDAY, July 20.—Wind from N. W. to N.; hazy atmosphere, cloudy and squally.

WEDNESDAY, July 21.—Wind N. W., with slight variations to the eastward. Cloudy.

THURSDAY, July 22.—Wind N. W. by W., blue sky and cloudy.

FRIDAY, July 23.—Wind from W. by S. to W. S. W. and N. N. W. Cloudy, hazy atmosphere and rain. Niagara arrived at rendezvous at 8 30 P. M., latitude 52° 5′ N., longitude 32° 42′ W.

SATURDAY, July 24.—Wind N. N. W. and N. by E. Hazy atmosphere cloudy and squally.

SUNDAY, July 25.—Valorous arrived at 4 A. M. Calm, hazy atmosphere, and cloudy.

MONDAY, July 26.—Calm, hazy atmosphere, cloudy. Capt. Oldham, of the Valorous, came on board of the Niagara.

TUESDAY, July 27.—Calm and hazy atmosphere. Gorgon arrived at 5 P. M.

WEDNESDAY, July 28.—Light wind N. N. W., some sea, blue sky and hazy atmosphere. Agamemnon arrived at 5 P. M.

THURSDAY, July 29.—Latitude 52° 9′ N., longitude 32° 27′ W. Telegraph fleet all in sight. Sea smooth. Light wind from S. E. to S. S. E. Cloudy. Splice made at 1 P. M. Signals through the whole length of the cable on board both ships perfect. Depth of water 1,550 fathoms. Distance to the entrance of Valentia harbor 813 nautical miles, and from there to the Telegraph House the shore end of cable is laid. Distance to the entrance of Trinity Bay, Newfoundland, 822 nautical miles; and from there to the Telegraph House at the head of Bay of Bulls' Arm, 60 miles—making in all 882 nautical miles. The Niagara has 69 miles further to run than the Agamemnon.

The Niagara and the Agamemnon have each about 1,100 nautical miles of cable on board—nearly the same quantity as last year. At 7 45 P. M. ship's time, or 10 05 P. M., Greenwich time, signals from Agamemnon ceased, and the tests applied by the electricians showed that there was a want of continuity on the cable, but the insulation was perfect. Kept on paying out from Niagara very slowly, and constantly applying all kinds of electrical tests, until 9 10 P. M., ship's time, or 11 30 Greenwich time, when again commenced receiving perfect signals from the Agamemnon.

FRIDAY, July 30.—Latitude 51° 50′ N., longitude 34° 49′ W. Distance run by observation last 23 hours, 89 miles; do. by ship's log, 99¼; do. by engineer's log, 102; do. by patent log, 105.3. Paid out 131 miles 900 fathoms cable, or a surplus of 42 miles 900 fathoms over distance run by observation, equal to 48 per cent. Depth of water, 1,550 to 1,975 fathoms. Wind from S. E. to S. Weather thick and rainy, with some sea. Gorgon in position. At 3 50 A. M. finished the main deck coil, and commenced paying out from the berth deck.

467 miles from water, 1,465 fathoms.
547 " " " 1,080 "
577 " " " 465 "
747 " " " 200 "
793 " " Telegraph House at Bay of Bulls' Arm, Trinity Bay.

At 2 20 P. M. received signal from on board the Agamemnon that they had paid out 150 miles. At 2 36 P. M., had paid out from Niagara 150 miles cable, and informed engineers on board of Agamemnon of the same.

SATURDAY, July 31.—Latitude 51° 5′ N. longitude 38° 28′ W. Distance run by observation last 24 hours, 137 miles; distance run by ship's log last 24 hours, 141¾ miles; distance run by engineer's log last 24 hours, 142¼ miles; distance run by patent log last 24 hours, 137.6 miles. Paid out 159 miles 813 fathoms cable, or a surplus of 22 miles 843 fathoms over distance run by observation—equal to 17 per cent. Depth of water from 1,657 to 2,250 fathoms. Wind moderate, S. E. to S. W.; and from 6 A. M., N. W. by N. Weather cloudy, with rain and some sea. Gorgon in position. Total amount of cable payed out, 291 miles 730 fathoms. Total distance run by observation, 226 miles. Total distance run by patent log, 242.9-miles. Total distance run by ship's log, 241¼ miles. Total distance run by engineer's log, 244¼ miles. Surplus cable paid out over distance run by observation, 65 miles 730 fathoms, equal to 29 per cent. 330 miles from water, 1,465 fathoms; 410 miles from water, 1,080 fathoms; 450 miles from water, 465 fathoms; 510 miles from water, 200 fathoms; 656 miles from Telegraph House. At 1 14 P. M. had paid out from Niagara 300 miles of cable, and informed engineers on board of Agamemnon of the same. At 2 45 P. M. received signal from on board the Agamemnon, that they had paid out from her 300 miles cable. At 5 37 P. M. finished the coil on berth deck, and commenced to pay out from the lower deck.

SUNDAY, August 1.—Latitude 50° 32′ N., longitude 41° 55′ W. Distance run by observation last twenty-four hours, 145 miles; distance run by ship's log last twenty-four hours, 139 miles; distance run by engineer's log last twenty-four hours, 142 miles; distance run by patent log last twenty-four hours, 141 7-10 miles. Paid out 164 miles 683 fathoms cable, or a surplus of 19 miles, 683 fathoms over distance run by observation—equal to 14 per cent. Depth of water, 1,950 to 2,424 fathoms. Wind moderate and fresh, from N. N. E. to N. E. Weather cloudy, misty with squalls and heavy swell. Gorgon in position and keeping our course very accurately. Total amount of cable paid out, 456 miles 400 fathoms. Total distance run by observation, 371 miles. Total distance run by patent log, 384.6 miles. Total distance run by ship's log, 380¼ miles. Total distance run by engineer's log, 386¼ miles. Total amount of surplus cable paid out out over the distance run by observation, 85 miles 400 fathoms—equal to 23 per cent.; 185 miles to water, 1,465 fathoms; 265 miles to water, 1,080 fathoms; 305 miles to water, 465 fathoms; 365 miles to water, 200 fathoms; 451 miles to land, 511 miles to Telegraph House. At 3 05 P. M., finished paying out coil on lower deck, and changed to coil in the hold.

MONDAY, August 2.—Latitude, 49° 52′ N.; longitude, 45°′ 37 W. Distance run by observation last twenty-four hours, 154 miles; distance run by ship's log last twenty-four hours, 144 miles; distance run by engineer's log last twenty-four hours, 141¾ miles; distance run by patent log last twenty-four hours, 141.7 miles. Paid out 177 miles 150 fathoms cable, or a surplus of 23 miles 150 fathoms over distance run by observation—equal to 15 per cent. Depth of water, 1,600 to 2,385 fathoms. Wind north. Weather cloudy. Gorgon in position. The Niagara getting lighter and rolling heavily, it was not considered safe to carry sail to steady her, for in case of accident, it might be necessary to stop the ship as soon as possible. At 7 A. M. passed and signalled Cunard steamer from Boston to Liverpool. Total amount of cable paid out, 633 miles 500 fathoms; total distance run by observation, 525 miles; total distance run by patent log, 525.9 miles; total distance run by ship's log, 524¼ miles; total distance run by engineer's log, 528 miles; total amount of surplus cable paid out over distance run by observation, 108 miles 500 fathoms, or less than 21 per cent.; 31 miles from water, 1,465 fathoms; 111 miles from water, 1,080 fathoms; 151 miles from water, 465 fathoms; 211 miles from water, 200 fathoms; 297 miles from land; 357 miles from Telegraph House. At 12 38 A. M., ship's time, or 3 38 Greenwich time, imperfect insulation of cable detected in sending and receiving signals from Agamemnon, which continued until 5 48 A. M., ship's time, or 8.40 A. M., Greenwich time, when all was right again. The fault was found to be in the wardroom coil, on board of this ship, about 60 miles from the lower end, which was immediately cut and taken out of circuit.

TUESDAY, August 3.—Latitude, 49° 17′ N.; longitude, 49° 23′ W. Distance run by observation last twenty-four hours, 147 miles; distance run by ship's log last twenty-four hours, 137 miles; distance run by engineer's log last twenty-four hours, 118¼ miles; distance run by patent log last twenty-four hours, 134¼ miles. Paid out 161 miles 63 fathoms cable, or a surplus of 14 miles 768 fathoms over distance run by observation—equal to 10 per cent. Depth of water 742 to 1,827 fathoms. Wind N. N. W. Weather very pleasant. Gorgon in position. Total amount of cable paid out, 795 miles 300 fathoms; total distance run by observation, 672 miles; total distance run by patent log, 660.4 miles; total distance run by ship's log, 661¼ miles; total distance run by engineer's log, 666½ miles; total amount of surplus cable paid out over distance run by observation, 123 miles 300 fathoms —less than 19 per cent. 74 miles to water, 200 fathoms; 150 miles to water, land; 210 miles to Telegraph House. At 8 26 A. M., finished paying out coil from hold, and commenced paying out from wardroom coil; 805 miles cable remaining on board at noon. At 11 15 A. M., ship's time, received signals from on board the Agamemnon, that they had paid out from her 780 miles of cable. In the afternoon and evening passed several icebergs. At 9 10 P. M., ship's time, received signal from the Agamemnon that she was in water of 200 fathoms. At 10 20 P. M., ship's time, Niagara in water of 200 fathoms, and informed Agamemnon of the same.

WEDNESDAY, Aug. 4.—Latitude, 48° 17′ N.; longitude, 2° 43′ W. Distance run by observation, 146 miles; distance run by ship's log, 149 miles; distance run by engineer's log, 149 miles; distance run by patent log, 142 miles. Paid out 154 miles 060 fathoms cable, or a surplus of 8 miles 360 fathoms over distance run by observation, equal to 6 per cent. Depth of water less than 200 fathoms. Weather beautiful, perfectly calm. Gorgon in position. Total amount of cable paid out, 949 miles 660 fathoms; total amount run by observation, 818 miles; total amount run by patent log, 802 4-10 miles; total amount run by ship's log, 810¼ miles; total amount run by engineer's log, 815¼ miles. Surplus cable paid out over distance run by observation, 131 miles 660 fathoms, about 16 per cent.; 64 miles from the Telegraph House. Received signal from Agamemnon at noon that they had paid out from her 940 miles of cable. Passed this morning several icebergs. Made the land off entrance to Trinity Bay at 8 P. M. Entered Trinity Bay at 12 30 P. M. At 2 30 P. M. stopped sending signals to Agamemnon for 14 minutes, for the purpose of making splice.

THURSDAY, August 5.—At 1 45 A. M., Niagara anchored. Distance run since noon yesterday, 64 miles; amount of cable paid out, 66 miles 382 fathoms, being a loss of less than 4 per cent. Total amount of cable payed out since splice was made, 1,016 miles 600 fathoms. Total amount of distance, 882 miles. Amount of cable paid out over distance run, 134 miles 600 fathoms, being a surplus of about 15 per cent. At 2 A. M. I went ashore in a small boat, and awoke persons in charge of the Telegraph House, half a mile from landing, and informed them that the Telegraph fleet had arrived, and were ready to land the end of the cable. At 2 45 received signal from the Agamemnon that she had paid out 1,010 miles cable. At 4 A. M., delivered the following telegraphic despatch for the Associated Press, to be forwarded to New York as early in the morning as the offices of the line were open:

UNITED STATES STEAM FRIGATE NIAGARA,
TRINITY BAY, Newfoundland, August 5, 1858.

TO THE ASSOCIATED PRESS, New York—

The Atlantic Telegraph fleet sailed from Queenstown, Ireland, Saturday, July 17, to meet in mid ocean Wednesday, July 28. Made the splice at 1 P. M., Thursday, the 29th, and separated—the Agamemnon and Valorous, bound to Valentia, Ireland; the Niagara and Gorgon for this place, where they arrived yesterday, and this morning the end of the cable will be landed.

It is 1,696 nautical, or 1,950 statute miles from the Telegraph House at the head of Valentia harbor to the Telegraph House at the Bay of Bulls, Trinity Bay, and for more than two-thirds of this distance the water is more than two miles in depth. The cable has been paid out from the Agamemnon at about the same speed as from the Niagara. The electric signals sent and received through the whole cable are perfect.

The machinery for paying out the cable worked in the most satisfactory manner, and was not stopped for a single moment from the time the splice was made until we arrived here.

Captain Hudson, Messrs. Everett and Woodhouse, the engineers, the electricians, the officers of the ship, and in fact, every man on board the telegraph fleet, has exerted himself to the utmost to make the expedition successful, and by the blessing of Divine Providence it has succeeded.

After the end of the cable is landed and connected with the land line of telegraph, and the Niagara has discharged some cargo belonging to the Telegraph Company, she will go to St. Johns for coal, and then proceed to New York at once.

CYRUS W. FIELD.

The machinery for paying out the cable is certainly all that could be desired. The brakes are perfect. The greatest strain ever upon the cable was 23 cwt., and that only for a short time. The cable was paid out at an angle of from ten to nineteen degrees with the horizon, and at an average speed of six miles and a half per hour; and the average speed of the ship during the whole time the cable was being submerged, of five and two-third miles per hour.

The cable was well coiled, and ran out beautifully. Left with M. de Sauty, at his request, one and a half miles of the raised cable, and there is now remaining on board of this ship about sixty miles of the cable manufactured this year, and about twenty miles of the cable that was submerged last year and recovered.

For many interesting particulars in regard to the laying of the cable, I would refer you to the reports of the engineers and electricians.

At 5 15 A. M., telegraph cable landed. At 6, end of cable carried into Telegraph House, and receiving very strong currents of electricity through the whole cable from the other side of the Atlantic. Captain Hudson, of the Niagara, then read prayers, and made some remarks.

At 1 P. M., Her Majesty's steamer Gorgon fired a royal salute of twenty-one guns. All day discharging cargo, belonging to Telegraph Company, from Niagara and Gorgon. Telegraph House here not nearly finished. Received a large number of telegraph messages, congratulating us on the successful landing of the cable. Great credit is due to Commander Dayman, of Her Majesty's steamer Gorgon, for the careful and correct way in which he led the Niagara during the laying of the cable, keeping so near the line of the great circle arc. Too much praise cannot be awarded Captain Otter, of Her Majesty's steamer Porcupine, for the accurate and skilful manner in which he piloted the Niagara from the time he met us in Trinity Bay until our final anchorage near the shore where the cable was landed.

FRIDAY, August 6, at 2 A. M., steam-tug Blue Jacket arrived from St. Johns, and Mr. Brooking's partner was one of the passengers. M. De Sauty and myself urged him to have the Telegraph House finished as soon as possible. M. De Sauty purchased supplies from the Niagara, as they had *hardly* any provisions at the house, and the purser said they could have what they wanted at cost. At 11 A. M., received strong electric signals from the Telegraph House, Valentia. Arranging office, &c. Wrote the following despatch, to be forwarded to London as soon as the line was in operation:

BAY OF BULLS, N. F.

DIRECTORS OF ATLANTIC TELEGRAPH COMPANY, London:

Entered Trinity Bay at noon, Wednesday; landed cable at six Thursday morning. Ship at once to St. Johns two miles of shore cable, with ends prepared for splicing. Please request the Admiralty to permit the Gorgon, Com. Dayman, to accompany the Niagara to New York. When was the cable landed at Valentia? Please answer here by Telegraph, and forward by mail to New York my letters. CYRUS W. FIELD.

As I feel confident that it will be impossible for us to transmit promptly through one cable all the messages that will be offered, I hope that you will order another, manufactured in time to lay next summer.

The experience that has been had the last and present year, should prove of great value to your company.

Sent and received by telegraph a number of messages, among which were the following:

BEDFORD SPRINGS, PA., August 6, 1858.

To CYRUS W. FIELD, ESQ., Trinity Bay:

MY DEAR SIR:—I congratulate you with all my heart upon the success of the great enterprise with which your name is so honorably connected.

Under the blessing of Divine Providence, I trust it may prove instrumental in promoting perpetual peace and friendship between kings and nations. I have not yet received the Queen's despatch.

Yours, very respectfully,
JAMES BUCHANAN.

NEW YORK, August 6, 1858.

To CYRUS W. FIELD, Trinity Bay:

The city is intensely excited over your success. The news has reached all parts of the Union. Messages are offering for Europe. Shall we take them? Answer. J. EDDY.

ST. JOHNS, N. B., August 6, 1858.

To CYRUS W. FIELD, Trinity Bay:

Excitement here increasing. Parties in every moment for business. What tariff from here? D. B. STEVENS.

BOSTON, August 6, 1858.

To CYRUS W. FIELD, Trinity Bay:

DEAR SIR:—The city authorities of Boston to-day ordered the firing of 100 guns upon the Common, and the ringing of bells for one hour from noon, in honor of the successful laying of the cable.

Respectfully yours, ALEX. H. RICE.

TORONTO, August 6, 1858.

To CYRUS W. FIELD, Trinity Bay:

His Excellency, the Governor General, desires to express his congratulations on the success of the accomplishing of the great undertaking of laying the Atlantic telegraph cable. A. J. PENNEFEATHER, Governor's Sec'y.

Sent to the Associated Press the following messages:

TRINITY BAY, N. F., August 6, 1858.

To THE ASSOCIATED PRESS, New York:

The Atlantic telegraph cable was successfully landed here yesterday morning, and is in perfect order. The Agamemnon has landed her end of the cable, and we are now receiving signals from the Telegraph House, Valentia.

The United States steam frigate Niagara and her Majesty's steamers Gorgon and Porcupine leave for St. Johns to-morrow.

Due notice will be given when the Atlantic telegraph line will be open for business. CYRUS W. FIELD.

TRINITY BAY, N. F., Friday Evening, August 6, 1858.

To THE ASSOCIATED PRESS, New York:

Since our arrival here yesterday morning, I have been constantly receiving telegraphic messages asking for full particulars in regard to the laying of the Atlantic cable, to which it is impossible to reply, as every moment of my time will be fully occupied while I remain here; and I have handed to Mr. McKay, superintendent of the New York, Newfoundland, and London Telegraph Company's line, my daily journal, and given him full permission to send from the same any extracts that he might think of interest to the public, and especially those portions which will reply to the communications that I have received.

CYRUS W. FIELD.

Mr. McKay sent to the press the next day extracts from my journal.

SATURDAY, August 7.—Steamers Niagara, Gorgon, and Porcupine sailed, and returned on account of the fog. I visited lead mines to engage men to work on Telegraph House, cut wood, build road, &c. Electricians busy fitting up instruments. The following telegraphic messages, with many others, were sent and received:

TRINITY BAY, August 7, 1858.

To his Excellency JAMES BUCHANAN, President of the United States,

Bedford Springs, Penn.:

MY DEAR SIR:—Your telegraphic despatch is duly received. We landed here in a wilderness, and until the telegraph instruments are all ready and perfectly adjusted, no message can be recorded over the cable. You shall have the earliest intimation, but some days may elapse before all is perfected. The first message from Europe will be from the Queen to yourself, and the first from America to Europe your reply. With great respect, truly your servant,

CYRUS W. FIELD.

NEW YORK, August 7, 1858.

To CYRUS W. FIELD, Trinity Bay:

We have no facts in addition to your despatch of the 5th to the press. Every incident connected with the landing of the cable, or with the enterprise in any way, will be eagerly received by the public throughout the country. There is intense anxiety to know all in relation to it, and the press desires the line kept open at evening, so long as there are any facts of interest to transmit. Respectfully, PETER COOPER.

NEW YORK, August 7, 1858.

To MR. MCKAY, Trinity Bay:

Please avail yourself liberally of Mr. Field's kind permission, and send us for morning papers from one to two thousand words from his diary. Add to it a circumstantial report of what has been done since the Niagara arrived at Trinity Bay. We will cheerfully pay the operators extra for their services.

There is a degree of excitement here which you cannot conceive of, and we want to meet public demand. D. H. CRAIG.

TRINITY BAY, August 7, 1858.

To THE ASSOCIATED PRESS, New York:

We landed here in the woods, and until the telegraph instruments are all ready, and perfectly adjusted, no communications can pass between the two continents; but the electric currents are received freely.

You shall have the earliest intimation when all is ready, but it may be some days before every thing is perfected. The first through message between Europe and America will be from the Queen of Great Britain to the President of the United States, and the second his reply. CYRUS W. FIELD.

SUNDAY, August 8.—Good signals being received through the cable. Religious service at Telegraph House at 5 P. M.

MONDAY, August 9.—Offered to remain at Trinity Bay with the electricians, if I could be of any service to them; but as I could not, left in the United States steam frigate Niagara at half past 5 A. M., for St. Johns. Her Majesty's steamers Gorgon and Porcupine sailing in company. At 6 P. M., arrived at St. Johns, where there was great rejoicing at the laying of the cable. Received here a great number of telegraphic messages, some of which I copy.

NEW YORK, August 9, 1858.

To CYRUS W. FIELD, St. Johns:

Your family are all at Stockbridge, and well. The joyful news arrived there on Thursday, and almost overwhelmed your wife. Father rejoiced like a boy. Mother was wild with delight. Brothers, sisters, all were overjoyed. Bells were rung, guns fired, children let out of school, shouted, "The cable is laid," "The cable is laid."

The village was in a tumult of joy. My dear brother, I congratulate you. God bless you. DAVID DUDLEY FIELD

TRINITY BAY, August 9, 1858.

To CYRUS W. FIELD, St. Johns:

I have just joined up key and large coils, and am now sending to Valentia Shall communicate again shortly. DE SAUTY.

TRINITY BAY, August 9, 1858.

To CYRUS W. FIELD, St. Johns:

It is necessary to pass many preparatory signals for adjustment of our instruments, needing some slight alterations. Do not expect her Majesty's message before the morning. Still exchanging good signals. DE SAUTY.

TRINITY BAY, August 9, 1858.

To CYRUS W. FIELD, St. Johns:

Receiving good recorded currents from Valentia,
Perfectly satisfactory. DE SAUTY.

TRINITY BAY, August 9, 1858.

To CYRUS W. FIELD, St. Johns:

I have received perfectly a communication from Valentia, and they get our signals there. Please send early, without fail, the fly-wheel. DE SAUTY.

NEW YORK, August 9, 1858.

To CYRUS W. FIELD, St. Johns:

DEAR SIR:—The Common Council of New York have resolved on a great celebration of the laying of the cable. The Committee of Arrangements desire to know the day on which the first message will be sent, in order to recommend a general illumination in the evening. Please send reply today.

DANIEL F. TIEMANN, Mayor.

ST. JOHNS, Tuesday, August 10, 1858.

Wrote to Messrs. T. H. Brooking, Sons & Co., in regard to completing Telegraph House and furnishing M. De Sauty with supplies.

ST. JOHNS, NEWFOUNDLAND, August 10, 1858.

Messrs. BROOKING. SONS & Co., St. Johns:

GENTLEMEN:—I have to request you will, as quickly as possible, brickway cell, and otherwise finish the house in Bay of Bull's Arms, belonging to the Atlantic Telegraph Company, and make such additions thereto as M. De Sauty may require. Also please furnish M. De Sauty with any supplies that he may order on account of the company. I remain, gentlemen, very truly your friend,

CYRUS W. FIELD,
General Manager Atlantic Telegraph Company.

Received an address from the Executive Council of Newfoundland, and also one from the Chamber of Commerce of St. Johns, and below you have copies of the same and my replies.—[These will be found in full in the account of the reception at St. Johns.—*Author.*]

The telegraph line to the United States was occupied every moment, and I gave the officers of the steamers the privilege of sending and receiving free, as many messages as they choose.

The Governor had a large dinner party at seven, where I met many of my oldest Newfoundland friends; and later in the evening there was a grand ball at the Colonial Building.

Sent and received many telegraph messages, of which the following are a portion:—

New York, August 11, 1858

To Cyrus W. Field, St. Johns:

Parties are pressing upon us messages, wishing to pay for them, and have them take their turn when the line opens. What shall we do? Please reply.

W. G. Hunt.

St. Johns, N. F., Wednesday, August 11, P. M

Wilson G. Hunt, Esq., New York.

Message received. I leave for New York in the Niagara this afternoon. Before I left London the directors of the Atlantic Telegraph Company decided unanimously that for several weeks after the cable was laid, it should be kept solely for the purpose of allowing several different electricians to try their various modes, and decide which could work through the cable with greatest speed and accuracy. Due notice will be given simultaneously, in Europe and America, when we are ready to receive business.

Cyrus W. Field.

St. Johns, Wednesday, Aug. 11, P. M.

To the Associated Press, New York.

Before I left London, the directors of the Atlantic Telegraph Company decided unanimously that, after the cable was laid and the Queen's and President's messages transmitted, the line should be kept for several weeks for the sole use of Dr. Whitehouse, Professor Thompson, and other electricians, to enable them to thoroughly test their several modes of telegraphing, so that the directors might decide which was the best and most rapid method for future use; for it was considered that after the line should be once thrown open for business, it would be very difficult to obtain it for experimental purposes, even for a short time.

Due notice will be given when the line will be ready for business, and the tariff of prices.

Cyrus W. Field.

St. Johns, N. F., Wednesday, August 11, 1858.

Vice Admiral Sir Houston Stewart, K. C. B., &c., Halifax, N. S.

Respected Sir:—I should consider it a very great personal favor if you would permit the Gorgon, Captain Dayman, to accompany the Niagara, Captain Hudson, to New York.

English officers and English sailors have labored with American officers and American sailors to lay the Atlantic cable. They were with us in our days of trial, and pray let them, if you can, share with us our triumph.

I know this would be agreeable to Captain Dayman and his officers. Please answer here. With high regard, your obedient servant,

Cyrus W. Field.

Trinity Bay, August 11, 1858.

To Cyrus W. Field, St. Johns.

We are doing our best. I do not think you can assist us by staying at St. Johns.

It is vulcanized India rubber, not vulcanite that is required.

De Sauty.

Trinity Bay, August 11, 1858.

To Cyrus W. Field, St. Johns.

Nothing to communicate, All progressing satisfactorily.

De Sauty.

TRINITY BAY, August 11, 1858.

To CYRUS W. FIELD, St. Johns.

Thanks for your kind message. All well and desire to thank you for your kindness to them. Sixteen yards vulcanized rubber cord, quarter of an inch diameter, required.

Not a second shall be lost in sending Queen's message.

Wish you a pleasant voyage.

DE SAUTY.

Left St. Johns, in United States steam frigate Niagara, at 4 30 P. M., for New York.

Her Majesty's steamer Porcupine, Capt. Otter, leaving at the same time for Plymouth, England. Weather pleasant; light S. W. wind.

THURSDAY, August 12.—On our way to New York. Thick weather; smooth sea; wind S. W.

FRIDAY, Aug. 13.—Thick weather in the forenoon; pleasant in the afternoon, with very light S. wind.

SATURDAY, August 14.—Calm; beautiful warm weather.

SUNDAY, August 15.—Thick and rainy in the morning; clear at noon, with light S. W. wind. Were at noon much surprised to hear that the chief engineer of the Niagara had just informed Captain Hudson that he had not coal enough left to take the ship to New York.

Fires were allowed to gradually go down, and proceed slowly under sail. The coal purchased at St. Johns turned out to be very poor for steam purposes, and has burned away much faster than was expected. At 5 P. M., more than 350 miles from New York, took on board from pilot boat No. 5, a New York pilot.

MONDAY, August 16.—Light head wind; thick weather; sailing very slowly, not more than two knots per hour, until 4½ P. M., when fires were lighted, and proceeded under easy steam towards New York.

TUESDAY, August 17.—Light west wind and very foggy in the morning; clear and pleasant in the afternoon, with wind from S. W. and S.

WEDNESDAY, August 18.—Passed Fire Island Light at 2 A. M., made Sandy Hook light at 4, and at about 6 chartered tugboat Achilles to take me to New York, where I arrived a little before 9 A. M.

The Niagara will cross the bar at high tide this afternoon, and arrive opposite the city at about 5 P. M. There is great rejoicing all over the country at the successful laying of the Atlantic cable.

One end of the Atlantic cable was landed from the Niagara on the Irish shore, August 5, 1857, and the other on the American side, August 5, 1858, from the same vessel.

The heavy shore end laid last year from Valentia still remains, and the main cable is to be spliced on to it, so that both ends have been landed from the Niagara.

The cable now laid in Trinity Bay is the same as was submerged last year, from the shore end of the Irish coast, and since recovered. The telegraph fleet sailed from Plymouth on the experimental trip May 29; the cable broke at the stern of the Agamemnon on the 29th of June, and the last splice was made on the 29th of July. The Atlantic Telegraph Company failed to lay their cable in August, 1857, and again in the second effort, June, 1858, but succeeded in the third attempt.

Sailed from Queenstown July 17, and would undoubtedly have arrived at New York yesterday (August 17), provided we had had on board a supply of coal.

Will you please to send me by mail a copy of the log of the Agamemnon from the time the splice was made until she arrived at Valentia, with the engineers' and electricians' reports of the laying of the cable from that ship?

At your unanimous request, but at a very great personal sacrifice to myself, I accepted the office of General Manager of the Atlantic Telegraph Company, for the sole purpose of doing all in my power to aid you to make the enterprise successful; and as that object has been attained, you will please accept my resignation. It will always afford me pleasure to do any thing in my power, consistent with my duties to my family and my own private affairs, to promote the interest of the Atlantic Telegraph Company.

I shall write you by the next mail in regard to the cable and machinery on board of the Niagara.

Rejoicing with you in the success which has, under the blessing of God, attended our united efforts to connect the Old and New Worlds by the electric telegraph, I remain, gentlemen, very truly, your friend,

CYRUS W. FIELD.

NEW YORK AND NEWFOUNDLAND TELEGRAPH STATION.

Report and Log of the Engineer, Mr. W. E. Everett.

UNITED STATES STEAMER NIAGARA, August 17, 1858.

TO THE DIRECTORS OF THE ATLANTIC TELEGRAPH COMPANY,
22 Old Broad Street, London.

GENTLEMEN:—I have the honor to enclose a copy of the engineer's log, which contains every particular of any importance connected with the paying out of the telegraph cable from this ship, and requires no explanation further than that the great percentage of loss from the time of making the splice to the next day at noon, was undoubtedly caused, to an extent, by the ship not running directly on her course, as for that day there was a difference of sixteen and a third miles between distance run by observation and patent log, while for the remaining part of the voyage they nearly coincided. Also, that the speed of the ship noted per hour must not be considered strictly correct, as it is not possible to log accurately by the ordinary means.

Nearly all of the stores were landed at the Telegraph House, Bay of Bulls' Arm, as they would be of much more service to the company there than any other disposition which could have been made of them.

There is now remaining on board about sixty miles of cable manufactured by Glass, Elliott & Co. during the present season, and about twenty miles of the cable recovered from Valentia Bay, most of which is not suitable for use.

The cable, machinery, and a few articles now on board, will be disposed of by the direction of Mr. Field.

It is almost needless for me to state, that each person connected with the undertaking has been untiring in his efforts to bring about so gratifying a result as the successful laying down of the Atlantic Telegraph Cable, and that Capt. Hudson and all the officers have made any and every sacrifice to further the great work. Accept my congratulations, and believe me, very truly, your obedient servant, W. C. EVERETT.

Thursday, July 29.

Hour. A. M.	Dynamometer Strain.	Brake Strain.	Angle of Rope. Horizontal.		Angle of Rope. Vertical.	Amount per hour by Rotometer. K.	F.	Speed of ship. K.	F.
10	—	—	—		—		200	—	
P. M.									
2	2000	1800	10°	S.	25°	4	600	2	2
3	2050	1900	10°	S.	21°	5	818	2	6
4*	2050	1900	18°	S.	20°	5	800	2	6
5	2050	1900	10°	S.	26°	6	060	4	2
6	2050	1900	10°	S.	15°	5	818	4	6
7	2050	1900	10°	S.	15°	5	241	4	4
8†	2050	1900	10°	S.	15°	5	894	4	4
9	—	2000	10°	S.	—°	2	418	2	
10	2050	1900	10°	S.	20°	5	888	3	6
11‡	2050	1900	10°	S.	18°	5	718	4	
12	2050	1900	11°	S.	19°	5	520	4	2

Latitude 52 deg. 09 min., N.; longitude, 32 deg. 29 min., W.
Depth of water, 1,550 fathoms.

*4.40 20 miles out.
†9.55 40 miles out.
‡10.46 50 miles out.

Remarks.

July 29.—From 8 to meridian.—At 10 20, stem of ship being secured by hawser, commenced veering out cable to the Agamemnon to make splice. At 10 30 veered out 100 fathoms.

From 12 to 4 commenced paying out the cable. At 1 P. M. hawser was let go, ship steaming ahead slow. At 2 54, 10 miles of cable paid out. Smooth sea.

From 4 to 6, smooth sea. At 4 40, 20 miles paid out.

From 6 to 8, sea smooth. Light breeze on port beam. At 6 31 paid out 30 miles of cable. At 7 54 continuity reported to have ceased. Ship's speed reduced.

From 8 to 12.—At 9 11 continuity restored. At 8 55, 40 miles paid out. At 10 46, 50 miles paid out. Distance run at midnight, by patent log, 41 miles.

Friday, *July* 30.

Hour. A. M.	Dynamometer Strain.	Brake Strain.	Angle of Rope.		Amount per hour by Rotometer.		Speed of ship.	
			Horizontal.	Vertical.	K.	F.	K.	F.
1	2050	1900	—	—	5	713	4	2
2	2050	1900	—	—	5	763	4	6
3	2050	1900	—	—	5	550	4	2
4	2050	1900	11° S.	14°	5	213	4	2
5	2050	1900	10° S.	16°	6	210	4	6
6	2050	1900	5° S.	14°	6	420	5	2
7	2050	1900	8° S.	14°	6	583	5	4
8	2050	1900	2° S.	14°	6	580	5	2
9	2050	1900	10° S.	12°	6	170	5	0
10	2050	1800	10° S.	12°	6	813	5	2
11	2050	1800	6° S.	12°	6	600	6	0
12*	2050	1800	5° S.	12°	8	100	7	4
P. M.								
1	2000	1800	8° S.	12°	6	833	5	4
2	2000	1800	9° S.	11°	7	070	6	0
3	2000	1800	9° S.	12°	7	010	6	0
4	2000	1800	5° S.	11°	7	000	6	4
5	2000	1800	10° S.	12°	6	813	6	0
6	2000	1800	10° S.	12°	6	813	6	2
7	2080	1800	8° S.	12°	6	465	6	0
8	2050	1800	10° S.	12°	6	558	5	6
9	2100	1800	—	—	6	390	5	0
10	2100	1800	—	—	6	513	5	4
11	2100	1800	—	—	6	600	6	0
12	2100	1800	—	—	6	513	6	2

* 72 minutes.
Depth of water, from 1,550 to 1,975 fathoms.
Latitude, 51 deg. 50 min.; longitude 34 deg. 49 min.

Knots of cable paid out, 131,900 fathoms.
Knots run by ship, 89.
Loss per cent., 48.

Remarks.

From midnight to 4 A. M.—At 12 34, 60 miles of cable paid out; at 2 10, 70 miles. Sea smooth; very light breeze on port quarter. At 3 55 finished paying out coil on spar deck, and commenced on the forward berth deck circle.

From 4 to 8.—At 4 10, 80 miles of cable out; at 5 45, 90 miles; at 7 17, 100 miles. Light, fair breeze; smooth sea. At 8 A. M. had run 81½ miles by patent log.

From 8 to meridian.—At 8 50, 110 miles of cable out; at 10 27, 120 miles; at 11 55, 130. Distance by patent log, for the last 24 hours, 104.3 miles. Light wind aft. Smooth sea.

From 12 to 4.—At 1 10, 140 miles of cable out; at 2 36, 150 miles; at 4 02, 160 miles. Distance by patent log at 4 P. M., 23.4 knots.

From 4 to 6.—At 5 30, 170 miles of cable out. Strong wind and moderate sea aft.

From 6 to 8.—At 7 03, 180 miles of cable out. Fresh breeze and moderate sea on port quarter.

From 8 to midnight.—At 8 34, 190 miles of cable out; at 10 08, 200 miles; at 11 34, 210 miles. Wind and sea moderate, wind veered from port quarter to port beam. Distance run since noon by patent log, 46.8 miles.

Saturday, *July* 31.

Hour. A. M.	Dynamometer Strain.	Brake Strain.	Angle of Rope.		Amount per hour by Rotometer.		Speed of ship.	
			Horizontal.	Vertical.	K.	F.	K.	F.
1	2050	1800	Too dark to see cable outboard.		6	500	5	7
2	2050	1800			7	070	6	0
3	2000	1800	10° S.	13°	6	963	6	0
4	2030	1800	0° S.	12°	7	080	6	0
5	2000	1800	0° S.	12°	6	713	6	1

Hour. A. M.	Dynamometer Strain.	Brake Strain.	Angle of Rope.		Amount per hour by Rotometer.		Speed of ship.	
			Horizontal.	Vertical.	K.	F.	K.	F.
6	2000	1800	0° S.	12°	6	000	5	4
7	2000	1800	5° S.	11°	6	300	5	6
8	2000	1800	9° S.	12°	6	313	6	0
9	2050	1800	2° S.	10°	6	550	6	1
10	2050	1800	3° S.	12°	6	253	5	7
11	2050	1800	2° S.	10°	6	170	5	7
12	2050	1800	3° S.	13°	7	560	6	4
P. M.								
1	2050	1800	3° S.	12°	6	683	5	4
2	2000	1750	5° S.	12°	7	200	5	6
3	2050	1800	6° S.	12°	6	300	6	0
4	2050	1800	3° S.	12°	7	313	6	0
5	2075	1800	10° S.	10°	6	493	5	7
6	2075	1800	10° S.	10°	5	903	5	4
7	2075	1800	9° S.	12°	6	530	5	6
8	2075	1800	7° S.	12°	6	663	5	0
9	2050	1800	4° S.	12°	6	420	5	5
10	2000	1800	Straight.	10°	6	523	6	0
11	2000	1800	5° S.	12°	6	770	5	7
12	2000	1800	4° S.	12°	6	623	5	7

Depth of water, 1,657 to 2,250.	Knots of cable paid out, 159 miles, 843 fathoms.
Latitude, 51 deg. 5 min.	Knots run by ship, 137.
Longitude, 33 deg. 23 min.	Loss, 17 per cent.

Remarks.

At 1 10, 220 miles of cable out; at 2 35, 230 miles; at 4 31, 240 miles. Fresh breeze and moderate sea on port quarter. Distance run by patent log since meridian Friday to 4 P. M. Saturday, 90.4 miles.

From 4 to 8.—At 5 34, 250 miles of cable out; at 7 11, 260 miles; at 8 11, ? miles, indicated by patent log since yesterday noon. Light breeze on port bow; sea moderate.

From 8 to meridian.—At 8 44, 270 miles of cable out; at 10 30, 280 miles; at 11 56, 290 miles. Distance run by patent log since Friday noon, 137.5 miles.

From meridian to 4 P. M.—At 1 14, 300 miles of cable out; at 2 35, 310 miles; at 4 02, 320 miles. Light head breeze; moderate sea. Rotometer 313 miles 700 fathoms.

From 4 to 6.—At 5 36, 330 miles of cable out; commenced orlop deck circle at 5 40. Very light breeze on starboard bow, with but little sea.

From 6 to 8.—At 7 12, 340 miles of cable out. Light head wind, with moderate sea. At 8, 44.3 miles run by patent log since meridian.

From 8 to midnight.—At 8 45, 350 miles of cable out; at 10 16, 360 miles; at 11 46, 377 miles.

Sunday, August 1.

Hour. A. M.	Dynamometer Strain.	Brake Strain.	Angle of Rope.		Amount per hour by Rotometer.		Speed of ship.	
			Horizontal.	Vertical.	K.	F.	K.	F.
1	2075	1800	—	—	6	853	6	3
2	2075	1800	—	—	7	200	6	4
3	2075	1800	—	—	7	400	5	7
4	2075	1800	4° N.	12°	7	213	5	6
5	2000	1800	3° N.	10°	7	400	6	
6	2000	1800	3° S.	10°	7	110	6	
7	2000	1800	10° N.	10°	6	903	6	2
8	2000	1800	10° N.	12°	6	723	6	4
9	2075	1800	11° N.	12°	6	090	6	
10	2100	1800	10° N.	12°	6	400	6	
11	2100	1800	12° N.	12°	7	100	6	
12	2100	1800	10° N.	11°	8	612	6	
P. M.								
1	2050	1800	10° N.	12°	7	300	6	3

Hour. A. M.	Dynamometer Strain.	Brake Strain.	Angle of Rope.		Amount per hour by Rotometer.		Speed of ship.	
			Horizontal.	Vertical.	K.	F.	K.	F.
2	2030	1800	11° N.	13°	6	903	6	4
3	2050	1800	10° N.	11°	6	723	6	
4	2050	1800	11° N.	13°	7	010	6	
5	2050	1800	7° N.	12°	7	490	6	
6	2050	1800	7° N.	12°	7	813	6	
7	2000	1800	7° N.	14°	6	983	6	
8	2030	1800	9° N.	12°	7	485	6	
9	2050	1800	—	—	7	703	6	
10	2100	1800	—	—	7	800	6	
11	2075	1800	—	—	7	800	6	
12	2050	1800	—	—	7	813	6	

Latitude, 50 deg. 32 min.	Knots run by ship, 145.
Longitude, 41 deg. 55 min.	Loss, 14 per cent.
Knots cable paid out, 164, 683.	Depth of water, from 1,950 to 2,424 fathoms.

Remarks.

From midnight to 4.—At 1 15, 380 miles of cable out; at 2 36, 390 miles of cable out; at 3 59, 400. Fresh breeze on starboard bow; moderate sea.

From 4 to 8.—At 5 20, 410 miles of cable out; at 6 47, 420 miles of cable out; at 5 A. M., 90 miles run by the ship since Saturday noon. Moderate sea and breeze forward of starboard beam.

From 8 to meridian.—At 8 09, 430 miles of cable out; at 9 54, 440 miles of cable out; at 11 16, 450 miles of cable out. Distance run by patent log, from meridian to meridian, 141.2 miles. Ship rolling considerably; strong breeze and moderate sea on starboard beam.

From 4 to 6.—At 4 45, 490 miles of cable run out. Strong wind and heavy sea on starboard beam; ship rolling heavily.

From 6 to 8.—At 6 05, 500 miles of cable out; at 7 33, 510 miles of cable out. Distance run since noon, by patent log, 46½ miles. Fresh breeze and moderate sea forward of starboard beam.

From 8 to midnight.—At 8 50, 520 miles cable out; 10 10, 530 miles of cable out; at 11 38, 540 miles of cable out. Wind moderating; heavy sea; ship rolling badly.

Monday, August 2.

Hour. A. M.	Dynamometer Strain.	Brake Strain.	Angle of Rope.		Amount per hour by Rotometer.		Speed of ship.	
			Horizontal.	Vertical.	K.	F.	K.	F.
1	2050	1800	11° N.	12°	7	830	5	4
2	2050	1800	10°	14°	7	840	6	4
3	2030	1800	11°	13°	7	444	6	4
4	2030	1800	11°	13°	7	640	6	
5	2000	1800	15°	13°	7	837	6	
6	2075	2100	14°	13°	7	000	5	
7	2150	2100	12°	13°	6	813	4	6
8	2150	2100	12°	13°	7	100	4	6
9	2250	2200	10°	13°	7	150	5	4
10	2250	2200	8°	12°	7	030	6	
11	2350	2200	10°	12°	8	070	6	4
12	2150	2100	8°	12°	9	613	6	2
P. M								
1	2000	1900	9°		7	863	6	4
2	1900	1900	0°		8	240	7	1
3	1850	1800	0°		8	260	7	
4	1850	1800	5°		7	813	6	6
5	1900	1800	Straight.		6	790	6	
6	1875	1800	9° N.		6	943	5	4
7	1875	1800	4°		7	573	6	
8	1870	1800	5°		6	613	5	4
9	1875	1800			6	743	6	
10	1875	1800	Could not see the cable over the stern.		6	150	6	
11	1924	1800			6	240	5	2
12	1875	1800			6	130	5	6

Depth of water, from 1,600 to 2,885.	Knots of cable paid out, 177, 150.
Latitude, 49 deg. 52 min., N.	Knots run by ship, 151.
Longitude, 45 deg. 37 min. W.	Loss, 15 per cent.

Remarks.

From midnight to 4.—At 12 58, 550 miles of cable out; at 2 18, 560 miles of cable out; at 3 38, 570 miles of cable out. Wind and sea moderate. Distance by patent log, from noon Sunday to 4 P. M. Monday, 106½ miles.

From 4 to 8—At 4 53, 580 miles of cable out; at 6 20, 590 miles of cable out; at 7 45, 600 miles of cable out. Light breeze on starboard beam. Moderate sea. Ship rolling. At 5 20 commenced in new cable, which is very dry, leaving the circles, and four in number.

From 8 to meridian.—At 9 11, 610 miles of cable out; at 10 25, 620 miles of cable out; at 11 47, 630 miles of cable out. Light wind and moderate sea forward of starboard beam. Patent log at noon, 141.3 miles.

From meridian to 4.—At 12 50, 640 miles of cable out; at 2 03, 650 miles of cable out; at 3 16, 660. Light breeze on starboard beam. Ship rolling considerably.

From 4 to 6.—At 4 42, 670 miles of cable out; at 6 09, 680 miles of cable out. Light breeze and moderate sea forward of starboard beam.

From 6 to 8.—At 7 40, 690 miles of cable out. Wind and sea same as previous watch. Distance since noon by patent log, 47.7 miles.

From 8 to midnight.—At 9 09, 700 miles of cable out; at 10 46, 710 miles of cable out. Light wind and gently rolling sea, forward of starboard beam.

Tuesday, August 8.

Hour.	Dynamometer Strain.	Brake Strain.	Angle of Rope.		Amount per hour by Rotometer.		Speed of ship.	
A. M.			Horizontal.	Vertical.	K.	F.	K.	F.
1	1975	1800	——	—	5	968	5	0
2	1850	1700	——	—	6	818	6	0
3	1800	1700	——	—	6	500	6	0
4	1800	1700	——	—	6	000	5	4
5	1775	1700	10° N.	12°	6	598	5	6
6	1600	1600	8°	12°	7	260	6	0
7	1650	1600	8°	12°	6	968	5	4
8	1600	1600	8°	11°	4	608	6	0
9	1450	1400	0°	12°	5	709	8	0
10	1450	1500	5° N.	15°	6	208	4	4
11	1200	1200	——	11°	6	818	6	0
12	1200	1200	——	11°	8	200	5	0
P. M.								
1	1200	1200	5° S.	12°	6	580	5	4
2	1200	1200	8°	12°	6	508	6	0
3	1200	1200	4°	12°	6	830	6	4
4	1200	1200	4°	12°	6	850	7	0
5	1200	1200	——	11°	6	808	6	4
6	below 1200	1200	——	12°	6	590	6	2
7	below 1200	1200	10° S.	12°	6	598	6	0
8	below 1200	1200	4° S.	13°	6	648	6	2
9	1000	1000	——	—	7	400	7	6
10	900	1000	——	—	6	100	5	6
11	1000	1000	——	—	3	800	3	2
12	1000	1000	——	—	5	218	5	2

Latitude, 49 deg. 17 min., longitude, 49 23.	Knots run by ship, 147.
Knots of cable paid out, 161, 768.	Loss, 10 per cent.

Remarks.

From midnight to 4 A. M.—At 12 28 A. M., 720 miles of cable paid out; at 1 57 A. M., 730 miles of cable paid out; at 3 30 A. M., 740 miles of cable paid out. Light breeze on starboard beam; heavy swell; ship rolling moderately. Distance by patent log, from 8 P. M. to 4 P. M., 43.1 miles.

From 4 to 8.—Light breeze and sea forward of starboard beam. At 5 15, 750 miles of cable out; at 6 29, 760 miles of cable out; at 7 56, 770 miles of cable out.

From 8 to meridian.—At 8 26, cable all paid out from the forward circles, and commenced in the after circle. Total amount paid out 772 miles 700 fathoms. At 9 51 P. M., 780 miles of cable out; at 11 25 P. M., 790 miles of cable out. Set clock back 13 minutes. Distance run by patent log, 134.5 miles.

From meridian to 4.—Distance run by patent log, 24.5 miles. At 12 44, 800 miles of cable out; at 2 15, 810 miles of cable out; at 3 47, 820 miles of cable out.

From 4 to 6.—Nearly calm, with smooth sea during the watch. At 5 16, 830 miles of cable out.

From 6 to 8.—Distance run by patent log, from noon to 8 P. M., 50.3 miles. At 6 47, 840 miles of cable out.

From 8 to midnight.—Distance run by patent log, 15.7 miles. At 8 15, 850 miles of cable out; at 9 10, 860 miles of cable out; at 12, 870 miles of cable out. At 8 30 the Agamemnon made signals that she was in soundings.

Wednesday, August 4.

Hour.	Dynamometer Strain.	Brake Strain.	Angle of Rope.		Amount per hour by Rotometer.		Speed of Ship.	
A. M.			Horizontal.	Vertical.	K.	F.	K.	F.
1	1100	1000	Too dark to see cable.		6	410	6	2
2	1100	1000			6	623	6	4
3	1100	1000	8° S.	13°	6	120	6	0
4	1050	1000	4°	12°	6	170	6	6
5	900	900	4°	11°	5	703	5	6
6	900	900	—	11°	5	800	5	6
7	900	900	—	10°	6	713	6	2
8	900	900	—	11°	6	513	6	2
9	850	800	Straight.	13°	6	630	6	4
10	800	800	6° S.	13°	7	270	6	6
11	800	800	6°	12°	7	118	7	0
12	800	800	4°	11°	8	660	8	0
P. M.								
1	800	800	4° S.	12°	7	853	7	0
2	800	800	—	15°	7	560	7	0
3	1000	1300	—	30°	4	953	4	0
4	800	800	—	12°	3	513	3	0
5	800	800	4°	11°	5	820	5	6
6	800	800	Straight.	11°	6	253	5	6
7	600	600	—	—	6	140	5	6
8	600	600	—	—	3	600	2	6
9	400	400	—	—	4	683	1	6
10	400	400	—	—	2	733	2	6
11	400	400	—	—	4	320	3	0
12	400	400	—	—	4	190	3	0

Latitude, 48 deg. 17 min.; longitude, 52 deg. 43 min.
Knots of cable paid out, 154 miles 360 fathoms.
Knots run by ship, 146 miles.

Loss 6 per cent.
Depth of water from 742 to 200 fathoms.

Remarks.

From midnight to 4 A. M.—At 1 33, 880 miles of cable out; at 3 08, 890 miles; nearly calm, with smooth sea. Patent log, from noon Tuesday to 4 P. M. on Wednesday, indicated 91.6 miles.

From 4 to 8.—At 4 48, 900 miles of cable out; at 6 25, 910 miles; at 8, 920 miles. Distance by patent log, from Tuesday noon to Wednesday, 8 A. M., 115.7 miles.

From 8 to meridian.—At 9 29, 940 miles of cable out; at 10 50, 940 miles; at 12 43, 950 miles. Distance by patent log, for last 24 hours, 142 miles. Set the clock back ten minutes.

From meridian to 4.—At 1 28, 960 miles of cable out; at 3 10, 970 miles.

From 4 to 6.—At 5 10, 980 miles of cable out. Changed from wardroom to quarter deck coil at 4 50 P. M., in order to cut out a fault which had been developed yesterday, when rotometer indicated 978 miles 400 fathoms paid out. From noon to 4 P. M., by patent log, 21.6 miles.

From 6 to 8.—At 6 41, 990 miles of cable out. Distance run, by patent log, since noon, 41.1 miles.

From 8 to midnight.—At 9 38, 1,000 miles of cable out; at 12 06, 1,010 miles. At midnight the patent log indicated 58 miles run since noon.

Thursday, August 5.

Hour.	Dynamometer Strain.	Brake Strain.	Rotometer.		Amount per hour by Rotometer.		Speed of ship.	
A. M.			K.	F.	K.	F.	K.	F.
1	400	400	1,013	600	4	00	2	6
2	—	—	1,016	600	3	00	2	0

Remarks.

From midnight to 4 A. M.—At 1 45 ship came to anchor off telegraph house, Bay of Bulls' Arm. At 1 A. M.—Distance run, by patent log, since noon of previous day, 62.6 miles. At 3 30, coiled 1¼ miles of cable aft, preparatory to the end being taken ashore in ships' boats. End of cable was landed ashore at 5.15 A. M.

Total amount of cable paid out since making splice in mid-ocean, 1,016 miles 600 fathoms. Total amount as per signal, per distance by the Agamemnon, 1,010.

Total distance run since making splice, 882 miles.

Total percentage of cable paid out over distance run, 15.

During the day 3 miles of cable was sent ashore, at the request of Mr. De Sauty, for future use.

THE LAYING AND LANDING OF THE CABLE ON THE EUROPEAN SIDE.

As the history of the final expedition would necessarily be incomplete without the narrative of the laying and landing of the cable on the European side, we feel gratified in being able to lay before our readers the following account, which was written by the reporter of the *London Times*, and which we copy from that paper:

In the face of difficulties and dangers, the magnitude of which cannot be properly appreciated by those not engaged in the work, the engineers engaged in this undertaking have, with almost untiring energy, adhered to their all but hopeless task with that perseverance which is sure, sooner or later, to lead to success. There were but few some twenty days ago who, after the unsuccessful return of the squadron to Queenstown, would have dared to predict such a speedy and glorious termination to all the trials and difficulties that the promoters of this undertaking have undergone. The final accomplishment of the scheme seemed indeed, up to the last moment, to hang upon a hair. Many serious difficulties had to be encountered during the six days and a half that the operations lasted, any one of which, had not chance favored us, might have ruined the expedition, and delayed the advance of ocean telegraphs perhaps more than half a century. But the difficult task has now been accomplished, and it only remains for us to accept the benefits which it will undoubtedly confer upon the community. Wonderful as the conception of conveying sensations from continent to continent, across the almost unknown depths of the ocean, may seem to us now, yet in a very little time people will forget the marvel while profiting by the fact; and without remembering the years of anxious toil and discouragement which those who have secured this boon to the community have undergone to secure success, the wonder will be not that the undertaking has been carried out at all, but that it had not been accomplished long before. It has been the custom of mankind to honor the lives and celebrate the deeds of great statesmen, successful warriors, and eminent divines. Indeed, of such materials are the links in the chain of history chiefly composed. But those men who, by patient thought and persevering action, have achieved victories over matter which secure to the community permanent advantages, very often have their trouble for their reward. It is to be hoped that this may not be the case with those who have been mainly instrumental in bringing this great scheme to a successful termination.

It must be confessed that the prospects of success were very remote when the squadron left Queenstown on the 17th of last month. The amount of cable in the two ships had been reduced by nearly four hundred miles, and the recollection of three separate and most unaccountable breakages was still fresh in the minds of all who had accompanied the first expedition, and there was no reason whatever for supposing that the very same thing might not occur again. The cable might, and evidently did, as far as the contractors are concerned, fulfil all the guaranteed requirements; and the numerous accidents which occurred might be due to the cable having become injured during the gale. This supposition, though it may be gratifying to Messrs. Glass & Co., was no consolation to either the engineers or the shareholders. Under these circumstances it is not surprising that many regarded the prosecution of the scheme as a waste of the shareholders' money. However, in spite of the most vehement opposition, the majority of the directors determined to despatch the expedition to try their fortune again in mid-ocean before they abandoned the scheme altogether as impracticable.

Accordingly, on the morning of Saturday, the 17th of July, the Valorous, Gorgon, and Niagara, having completed coaling, steamed away from Queenstown for the rendezvous. The Agamemnon, having to wait for Professor W. Thomson, one of the directors, who took charge of the electrical department on board, did not weigh anchor until two o'clock on the following morning. As the ships left the harbor, there was apparently no notice taken of their departure by those on shore or in the vessels anchored around them; every one seemed impressed with the conviction that we were engaged in a hopeless enterprise, and the squadron seemed rather to have slunk away on some discreditable mission, than to have sailed for the accomplishment of a grand national scheme. It was just dawn when the Agamemnon got clear of Queenstown harbor, but as the wind blew stiffly from the south-west, it was nearly ten o'clock before she rounded the Old Head of Kinsale, a distance of only a few miles. The weather remained fine during the day, and as the Agamemnon skirted along the wild and rocky shore of the south-west coast of Ireland, those on board had an excellent opportunity of seeing the stupendous rocks which rise from the water in the most grotesque and fantastic shapes. About five o'clock in the afternoon Cape Clear was passed, and, though the coast gradually edged away to the northward of our course, yet it was nearly dark before we lost sight of the rocky mountains which surround Bantry Bay and the shores of the Kenmare River.

By Monday morning, the 19th, we had left the land far behind us, and thence fell into the usual dull monotony of sea life. Of the voyage out there is little to be said. It was not checkered by the excitement of continual storms or the tedium of perpetual calms, but we had a sufficient admixture of both to render our passage to the rendezvous a very ordinary and uninteresting one indeed. For the first week the barometer remained unusually low, and the numbers of those natural barometers, Mother Carey's chickens, that kept in our wake, kept us in continual expectation of heavy weather. With every little breeze of wind the screw was got up and sail made, so as to husband our coal as much as possible, but it generally soon fell calm, and obliged Captain Preedy reluctantly to get up steam again. In consequence of these continued delays and changes from steam to sail, and from sail to steam again, much fuel was expended, and not more than eighty miles of distance made good each day.

On Sunday, the 25th, however, the weather changed, and for several days in succession there was an uninterrupted calm. The moon was just at the full, and for several nights it shone with a brilliancy which turned the smooth sea into one silvery sheet, which brought out the dark hull and white sails of the ship in strong contrast to the sea and sky, as the vessel lay all but motionless on the water, the very impersonation of solitude and repose. Indeed, until the rendezvous was gained, we had such a succession of beautiful sunrises, gorgeous sunsets, and tranquil moonlight nights, as would have excited the most enthusiastic admiration of any one but persons situated as we were. But by us such scenes were regarded only as the annoying indications of the calm which delayed our progress and wasted our coal. In spite of the unusual calmness of the weather in general, there were days on which our former unpleasant experiences of the Atlantic were brought forcibly to our recollection—when it blew hard, and the sea ran sufficiently high to reproduce on a minor scale some of the discomforts of which the previous cruise had been so fruitful. These days, however, were the exception, and not the rule, and served to show how much more pleasant was the inconvenient calm than the weather which had previously prevailed. By dint, however, of a judicious expenditure of fuel, and a liberal use of the cheaper motive power of sail, the rendezvous was reached on the evening of Wednesday, the 28th of July, just eleven days after our departure from Queenstown.

The rest of the squadron were in sight at nightfall, but at such a considerable distance that it was past ten o'clock on the morning of Thursday, the 29th, before the Agamemnon joined them. We were as usual greeted by a perfect storm of questions as to what kept us so much behind our time, and learned that all had come to the conclusion that the ship must have got on shore on leaving Queenstown harbor. The Niagara, it appeared, had arrived at the rendezvous on Friday night the 23d, the Valorous on Sunday the 25th, and the Gorgon on the afternoon of Tuesday the 27th.

The day was beautifully calm, so no time was to be lost before making the splice; boats were soon lowered from the attendant ships, the two vessels made fast by a hawser, and the Niagara's end of the cable conveyed on board the Agamemnon. About half-past twelve o'clock the splice was effectually made, but with materials very different from carefully-rounded semicircular boards which had been used to inclose the junctions on previous occasions. It consisted merely of two straight boards hauled over the joining, with the iron rod and leaden plummet, attached to the centre. In hoisting it out from the side of the ship, however, the leaden sinker broke short off and fell overboard; and there being no more convenient weight at hand, a thirty-two pound shot was fastened to the splice instead, and the whole apparatus was quickly dropped into the sea, without any formality, and, indeed, almost without a spectator, for those on board the ship had witnessed so many beginnings to the telegraphic line that it was evident they despaired of there ever being an end to it. The stipulated 210 fathoms of cable having been paid out to allow the splice to sink well below the surface, the signal to start was hoisted, the hawser cast loose, and the Niagara and Agamemnon started for the last time for their opposite destinations.

For the first three hours the ships proceeded very slowly, paying out a great quantity of slack, but after the expiration of this time, the speed of the Agamemnon was increased to about five knots per hour, the cable going at about six, without indicating more than a few hundred pounds of strain upon the dynamometer. Shortly after six o'clock a very large whale was seen approaching the starboard bow at a great speed, rolling and tossing the sea into foam all around, and for the first time we felt the possibility of the supposition that our second mysterious breakage of the cable might have been caused after all by one of these animals getting foul of it under water. It appeared as if it were making direct for the cable, and great was the relief of all when the ponderous living mass was seen slowly to pass astern, just grazing the cable where it entered the water, but fortunately without doing any mischief.

All seemed to go well up to about eight o'clock; the cable paid out from the hold with an evenness and regularity which showed how carefully and perfectly it had been coiled away; and to guard against accidents which might arise in consequence of the cable having suffered injury during the storm, the indicated strain upon the dynamometer was never allowed to go beyond 1,700 lbs., or less than one-quarter what the cable is estimated to bear, and thus far every thing looked promising of success. But, in such a hazardous work, no one knows what a few minutes may bring forth, for soon after eight, an injured portion of the cable was discovered about a mile or two from the portion paying out. Not a moment was lost by Mr. Canning, the engineer on duty, in setting men to work to cobble up the injury as well as time would permit, for the cable was going out at such a rate that the damaged portion would be paid overboard in less than twenty minutes, and former experience had shown us that to check either the speed of the ship, or the cable, would, in all probability, be attended by the most fatal results.

Just before the lapping was finished, Professor Thomson reported that the electrical continuity of the wire had ceased, but that the insulation was still perfect; attention was naturally directed to the injured piece as the probable source of the stoppage, and not a moment was lost in cutting the cable at that point, with the intention of making a perfect splice. To the consternation of all, the electrical tests applied showed the fault to be overboard, and in all probability some fifty miles from the ship. Not a second was to be lost, for it was evident that the cut portion must be paid overboard in a few minutes, and in the mean time, the tedious and difficult operation of making a splice had to be performed. The ship was immediately stopped, and no more cable paid out than was absolutely necessary to prevent it breaking.

As the stern of the ship was lifted by the waves, a scene of the most intense excitement followed. It seemed impossible, even by using the greatest possible speed, and paying out the least possible amount of cable, that the junction could be finished before the part was taken out of the hands of the workmen. The main hold presented an extraordinary scene; nearly all the officers of the ship and of those connected with the expedition, stood in groups about the coil, watching with intense anxiety the cable, as it slowly unwound itself nearer and nearer the joint, while the workmen, directed by Mr. Canning, under whose superintendence the cable was originally manufactured, worked at the splice as only men could work who felt that the life and death of the expedition depended upon their rapidity. But all their speed was to no purpose, as the cable was unwinding within a hundred fathoms, and, as a last and desperate resource, the cable was stopped altogether, and, for a few mintes, the ship hung on by the end. Fortunately, however, it, was only for a few minutes, as the strain was continually rising above two tons, and it would not hold on much longer; when the splice was finished, the signal was made to loose the stopper, and it passed overboard safely enough.

When the excitement consequent upon having so narrowly saved the cable had passed away, we awoke to the consciousness that the case was still as hopeless as ever, for the electrical continuity was still entirely wanting. Preparations were consequently made to pay out as little rope as possible, and to hold on for six hours, in the hopes that the fault, whatever it might be, might mend itself before cutting the cable and returning to the rendezvous to make another splice. The magnetic needles on the receiving instruments were watched closely for the returning signals; when, in a few minutes, the last hope was extinguished by their suddenly indicating dead earth, which tended to show that the cable had broken from the Niagara, or that the insulation had been completely destroyed.

In three minutes, however, every one was agreeably surprised by the intelligence that the stoppage had disappeared, and that the signals had again appeared at their regular intervals from the Niagara. It is needless to say what a load of anxiety this news removed from the minds of every one; but the general confidence in the ultimate success of the operations was much shaken by the occurrence, for all felt that every minute a similar accident might occur. For some time the paying-out continued as usual, but towards the morning another damaged place was discovered in the cable; there was fortunately, however, time to repair it in the hold without in any way interfering with the operations beyond for a time slightly reducing the speed of the ship.

During the morning of Friday the 30th, every thing went well; the ship had been kept at the speed of about five knots, the cable paid out at about six, the average angle with the horizon at which it left the ship being about 15 deg., while the indicated strain upon the dynamometer seldom showed more than 1,600 pounds to 1,700 pounds. Observations made at noon showed that we had made good ninety miles from the starting point since the previous day, with an expenditure, including the loss in lowering the splice and during the subsequent stoppages, of 135 miles of the cable. During the latter portion of the day the barometer fell considerably, and towards the evening it blew almost a gale of wind from the eastward, dead ahead of course. As the breeze freshened, the speed of the engines was gradually increased, but the wind more than increased in proportion, so that before the sun went down, the Agamemnon was going full steam against the wind, only making a speed of about four knots an hour. During the evening topmasts were lowered, and spars, yards, sails, and indeed, every thing aloft that could offer resistance to the wind, was sent down on deck; but still the ship made but little way, chiefly in consequence of the heavy sea, though the enormous quantity of fuel consumed showed us that if the wind lasted, we should be reduced to burning the masts, spars, and even the decks, to bring the ship into Valentia.

It seemed to be our particular ill-fortune to meet with head winds whichever way the ship's head was turned. On our journey out we had been delayed and obliged to consume an undue proportion of coal for want of an easterly wind, and now all our fuel was wanted because of one. However, during the next day the wind gradually went around to the south-west, which, though it raised a very heavy sea, allowed us to husband our small remaining store of fuel.

At noon on Saturday, the 31st of July, observations at noon showed us to be in latitude 52 deg. 23 N. and longitude 26 deg. 44 W., having made good 120 miles of distance since noon of the previous day, with a loss of about 27 per cent. of cable. The Niagara, as far as could be judged from the amount of cable she paid out, which by a previous arrangement was signalled at every 10 miles, kept pace with us, within one or two miles the whole distance across. During the afternoon of Saturday, the wind again freshened up, and before nightfall it again blew nearly a gale of wind, and a tremendous sea ran before it from the south-west, which made the Agamemnon pitch to such an extent that it was thought impossible the cable could hold on through the night; indeed, had it not been for the constant care and watchfulness exercised by Mr. Bright and the two energetic engineers, Mr. Canning and Mr. Clifford, who acted with him, it could not have been done at all. Men were kept at the wheels of the machine to prevent their stopping as the stern of the ship rose and fell with the sea, for had they done so the cable must undoubtedly have parted.

During Sunday the sea and wind increased, and before the evening it blew a smart gale. Now, indeed, were the energy and activity of all engaged in the operation tasked to the utmost. Mr. Hoar and Mr. Moore, the two engineers who had the charge of the relieving wheels of the dynamometer, had to keep watch and watch alternately every four hours, and while on duty durst not let their attention be removed from their occupation for one moment, for on their releasing the brakes every time the stern of the ship fell into the trough of the sea entirely depended the safety of the cable, and the result shows how ably they discharged their duty. Throughout the night there were few who had the least expectation of the cable holding on till morning, and many remained awake listening for the sound that all most dreaded to hear—viz., the gun which should announce the failure of all our hopes. But still the cable, which, in comparison with the ship from which it was paid out and the gigantic waves among which it was delivered, was but a mere thread, continued to hold on, only leaving a silvery phosphorous line upon the stupendous seas as they rolled on towards the ship.

With Sunday morning came no improvement in the weather; still the sky remained black and stormy to windward, and the constant violent squalls of wind and rain which prevailed during the whole day, served to keep up, if not to augment the height of the waves. But the cable had gone through so much during the night, that our confidence in its continuing to hold was much restored.

At noon observations showed us to be in lat. 52° 26′ N., and lon. 23° 16′ W., having made good 130 miles from noon of the previous day, and about 360 from out starting point in mid ocean. We had passed by the deepest sounding of 2,400 fathoms, and over more than half of the deep water generally, while the amourt of cable still remaining in the ship was more than sufficient to carry us to the Irish coast, even supposing the continuance of the bad weather should oblige us to pay out the same amount of slack cable we had been hitherto wasting. Thus far things looked very promising for our ultimate success. But former experience showed us only too plainly that we could never suppose that some accident might not arise until the ends had been fairly landed on the opposite shores.

During Sunday night and Monday morning the weather continued as boisterous as ever, and it was only by the most indefatigable exertions of the engineer upon duty that the wheels could be prevented from stopping altogether as the vessel rose and fell with the sea, and once or twice they did come completely to a standstill, in spite of all that could be done to keep them moving, but fortunately they were again set in motion before the stern of the ship was thrown up by the succeeding wave. No strain could be placed upon the cable, of course, and though the dynamometer occasionally registered 1,700 pounds as the ship lifted, it was oftener below 1,000, and was frequently nothing, the cable running out as fast as its own weight and the speed of the ship could draw it. But even with all these forces acting unresistedly upon it, the cable never paid itself out at a greater speed than eight knots an hour at the time the ship was going at the rate of six knots and a half. Subsequently however, when the speed of the ship even exceeded six knots and a half, the cable never ran out so quick. The average speed maintained by the ship up to this time, and, indeed for the whole voyage, was about five knots and a half, the cable, with occasional exceptions, running about 30 per cent. faster.

At noon on Monday, August 2, observations showed us to be in latitude 52° 35′ N., longitude 19° 48′ W., having made good 127½ miles since noon of the previous day, and completed more than the half way to our ultimate destination.

During the afternoon an American three-masted schooner, which afterwards proved to be the Chieftain, was seen standing from the eastward toward us. No notice was taken of her at first, but when she was within about half a mile of the Agamemnon she altered her course, and bore right down across our bows. A collision, which might prove fatal to the cable, now seemed inevitable, or could only be avoided by the equally hazardous expedient of altering the Agamemnon's course. The Valorous steamed ahead, and fired a gun for her to heave to, which, as she did not appear to take much notice of, was quickly followed by another from the bows of the Agamemnon, and a second and third from the Valorous, but still the vessel held on her course; and as the only resource left to avoid a collision the course of the Agamemnon was altered just in time to pass within a few yards of her. It was evident that our proceedings were a source of the greatest possible astonishment to them, for all her crew crowded upon her deck and rigging. At length they evidently discovered who we were, and what we were doing, for the crew manned the rigging, and dipping the ensign several times they gave us three hearty cheers. Though the Agamemnon was obliged to acknowledge these congratulations in due form, the feelings of annoyance with which we regarded the vessel which, either by the stupidity or carelessness of those on board, was so near adding a fatal and unexpected mishap to the long chapter of accidents which had already been encountered, may easily be imagined. To those below, who of course did not see the ship approaching, the sound of the first gun came like a thunderbolt, for all took it as the signal of the breaking of the cable. The dinner tables were deserted in a moment, and a general rush made up the hatches to the deck, but before reaching it their fears were quickly banished by the report of the succeeding gun, which all knew well could only be caused by a ship in our way or a man overboard.

Throughout the greater portion of Monday morning the electrical signals from the Niagara had been getting gradually weaker, until they ceased altogether for nearly three-quarters of an hour. Our uneasiness, however, was in some degree lessened by the fact that the stoppage appeared to be a want of continuity, and not any defect in insulation, and there was consequently every reason to suppose that it might arise from faulty connection on board the Niagara. Accordingly Professor Thomson sent a message to the effect that the signals were too weak to be read, and, as if they had been awaiting such a signal to increase their battery power, the deflections immediately returned even stronger than they had ever been before. Towards the evening, however, they again declined in force for a short time. With the exception of these little stoppages the electrical condition of the submerged wire seemed to be much improved. It was evident that the low temperature of the water at the immense depth improved considerably the insulating properties of the gutta percha, while the enormous pressure to which it must have been subjected probably tended to consolidate its texture, and to fill up any air bubbles or slight faults in manufacture which may have existed.

The weather during Monday night moderated a little, but still there was a very heavy sea on, which endangered the wire every second minute.

About three o'clock on Tuesday morning all on board were startled from their beds by the loud booming of a gun. Every one, without waiting for the performance of the most particular toilet, rushed on deck to ascertain the cause of the disturbance. Contrary to all expectation the cable was safe, but just in the gray light could be seen the Valorous rounded to in the most warlike attitude, firing gun after gun in quick succession towards a large American bark, which, quite unconscious of our proceeding, was standing right across our stern. Such loud and repeated remonstrances from a large steam frigate were not to be despised, and, evidently without knowing the why or the wherefore, she quickly threw her sails aback and remained hove to. Whether those on board her considered that we were engaged in some filibustering expedition, or regarded our proceedings as another British outrage upon the American flag, it is impossible to say; but certain it is that, apparently in great trepidation, she remained hove to until we had lost sight of her in the distance.

Tuesday was a much finer day than any we had experienced for nearly a week, but still there was a considerable sea running, and our dangers were far from passed; yet the hopes of our ultimate success ran high. We had accomplished nearly the whole of the deep sea portion of the route in safety, and that, too, under the most unfavorable circumstances possible; therefore there was every reason to believe that unless some unforeseen accident should occur, we should accomplish the remainder.

Observations at noon placed us in lat. 5° 26′ N., lon. 16° 7′ 40″ W., having run 134 miles since the previous day.

About five o'clock in the evening the steep submarine mountain which divides the telegraphic plateau from the Irish coast was reached, and the effect of the sudden shallowing of the water had a very marked effect upon the cable, causing the strain on and the speed of it to lessen every minute. A great deal of slack was paid out to allow for any great inequalities which might exist, though undiscovered by the sounding line. About ten o'clock the shoal water of 250 fathoms was reached; the only remaining anxiety now was the changing from the lower main coil to that upon the upper deck, and this most difficult and dangerous operation was successfully performed between three and four o'clock on Wednesday morning.

Wednesday was a beautiful calm day; indeed, it was the first on which any one would have thought of making a splice since the day we started from the rendezvous. We therefore congratulated ourselves on having saved a week by commencing operations on the Thursday previous. At noon we were in lat. 52° 11′, lon. 12° 42′ W., 89 miles distant from the telegraph station at Valentia. The water was shallow, so that there was no difficulty in paying out the wire almost without any loss of slack, and all looked upon the undertaking as virtually accomplished.

At about one o'clock in the evening the second change from the upper deck coil to that upon the orlop deck was safely effected, and shortly after the vessels exchanged signals that they were in two hundred fathoms water. As the night advanced the speed of the ship was reduced, as it was known that we were only a short distance from the land, and there would be no advantage in making it before daylight in the morning. About twelve o'clock, however, the Skelligs Light was seen in the distance, and the Valorous steamed on ahead to lead us in to the coast, firing rockets at intervals to direct us, which were answered by us from the Agamemnon, though, according to Mr. Moriarty, the master's wish, the ship, disregarding the Valorous, kept her own course, which proved to be the right one in the end.

By daylight on the morning of Thursday, the bold and rocky mountains which entirely surround the wild and picturesque neighborhood of Valentia, rose right before us at a few miles' distance. Never, probably, was the sight of land more welcome, as it brought to a successful termination one of the greatest, but, at the same time, most difficult schemes which was ever undertaken. Had it been the dullest and most melancholy swamp on the face of the earth that lay before us, we should have found it a pleasant prospect; but, as the sun rose from the estuary of Dingle Bay, tinging with a deep soft purple the lofty summits of the steep mountains which surround its shores, and illuminating the masses of morning vapor which hung upon them, it was a scene which might vie in beauty with any thing that could be produced by the most florid imagination of an artist.

No one on shore was apparently conscious of our approach, so the Valorous steamed ahead to the mouth of the harbor and fired a gun. Both ships made straight for Doulus Bay, and about six o'clock came to anchor at the side of Beginish Island, opposite to Valentia. As soon as the inhabitants became aware of our approach there was a general desertion of the place, and hundreds of boats crowded around us, their passengers in the greatest state of excitement to hear all about our voyage. The Knight of Kerry was absent in Dingle, but a messenger was immediately despatched for him, and he soon arrived in her Majesty's gunboat Shamrock. Soon after our arrival a signal was received from the Niagara that they were preparing to land, having paid out 1,030 nautical miles of cable, while the Agamemnon had accomplished her portion of the distance with an expenditure of 1,020 miles, making the total length of the wire submerged 2,050 geographical miles. Immediately after the ships cast anchor, the paddlebox boats of the Valorous were got ready, and two miles of cable coiled away in them, for the purpose of landing the end; but it was late in the afternoon before the procession of boats left the ship, under a salute of three rounds of small arms from the detachment of marines on board the Agamemnon, under the command of Lieutenant Morris.

The progress of the end to the shore was very slow, in consequence of the very stiff wind which blew at the time, but at about three o'clock the end was safely brought on shore at Knightstown, Valentia, by Mr. Bright and Mr. Canning, the chief and second engineers, to whose exertions the success of the undertaking is attributable, and the Knight of Kerry. The end was immediately laid in the trench which had been dug to receive it, while a royal salute, making the neighboring rocks and mountains reverberate, announced that the communication between the Old and the New World had been completed.

The end was immediately taken into the electric room by Mr. Whitehouse, and attached to a galvanometer, and the message was received through the entire length.

THE END.

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